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LIBRARIAN TIER 2
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Management of
Libraries & Information
Centres/Institutions

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Syllabus

Part IV: Management of Libraries and Information Centers/Institutions

Unit 1: Management

- Concepts, definitions, and scope of management
- Management styles and approaches
- Schools of management thought
- Functions and principles of Scientific Management

Unit 2: Human Resource Management

- Organizational structure
- Delegation, communication, and participation
- Job description and job analysis; job evaluation
- Interpersonal relations
- Recruitment procedures
- Motivation and group dynamics
- Training and development
- Discipline and grievance handling
- Performance appraisal

Unit 3: Financial Management

- Resource mobilization
- Budgeting techniques and methods (PPBS, Zero-Based Budgeting, etc.)
- Budgetary control
- Cost-effectiveness and cost–benefit analysis
- Outsourcing

Unit 4: Reporting

- Types of reports
- Annual reports: compilation, contents, and style
- Library statistics

Unit 5: System Analysis and Design

- Library as a system
- Project management (PERT/CPM)
- Decision tables
- Performance evaluation standards and MIS
- Performance measurement, reengineering, and time-and-motion study
- SWOT analysis (Strengths, Weaknesses, Opportunities, Threats)
- DFD (Data Flow Diagram)

Unit 6: Total Quality Management (TQM)

- Definition, concept, and elements
- Quality audit and LIS-related standards
- Technology management

Unit 7: Library Housekeeping Operations

- Sections of a library and information centre and their functions
- Collection development and management: policies and procedures
- Book ordering and acquisitions
- Technical processing

- Serials control, circulation control, and maintenance
- Stock verification: policies and procedures
- Evaluation and weeding
- Archiving, conservation, and preservation
- Restoration of print, non-print, and electronic materials

Unit 8: Planning

- Concept, definition, need, purpose, and types of planning
- Policies and procedures; Management by Objectives (MBO)
- Building and space management in libraries and information centres
- Library buildings: interior and exterior design, furniture, equipment, standards, and types
- Risk management and contingency management
- Planning of related infrastructure and library standards

Unit 9: Management of Change

- Concept of change
- Changes in procedures, methods, tools, and techniques
- Problems in incorporating change
- Techniques for managing change

Unit 1: Management

1. MANAGEMENT – MEANING AND SCOPE

A. Meaning of Management

Management has no universally accepted definition. It is a **process of acquiring and applying knowledge** to achieve organisational objectives **through people and resources**. It combines **science** (planning, decision-making, use of technology) and **art** (leadership, communication, motivation).

(a) Common Definitions of Management

i. Management is the art or process of getting work done through others.
ii. Management creates and maintains an internal environment where individuals work efficiently towards common goals.
iii. Management is the process of achieving goals through **Planning, Organising, Staffing, Directing and Controlling**.
iv. Management integrates human, material, financial and technological resources.
v. Management is a distinct body of organised knowledge.

B. Characteristics of Management

i. It is an **activity or process**, not a person.
ii. It refers to both a **discipline** and a **group of managers**.
iii. It is **goal-oriented and purposeful**.
iv. It ensures **economic use of resources**.
v. It is a **group activity**—by, with and through people.
vi. It requires skills, knowledge and practices.
vii. It is **aided by computers**, not replaced by them.
viii. It is **intangible**.

2. SCIENTIFIC MANAGEMENT

A. Concept of Scientific Management

Scientific management is closely associated with **Frederick W. Taylor**. It emphasises efficiency, standardisation and productivity through scientific study of work.

B. Major Contributors

i. Carl George Barth
ii. Henry L. Gantt
iii. Frank Gilbreth
iv. Lillian Gilbreth

(Note: Scientific management is different from management science.)

C. Schools of Management Thought

(a) Classical Management Theory (1880s–1920s)

i. Organisation-centred approach
ii. Concept of “economic man”
iii. Includes:

1. Scientific management
2. Administrative management (**Henri Fayol**)
3. Bureaucratic organisation (**Max Weber**)

(b) Neoclassical Theory (1920s–1950s)

i. Human-oriented approach
ii. Concept of “social man”
iii. Includes:

1. Human relations school (**Elton Mayo**)
2. Behavioural theories (**Abraham Maslow**, McGregor, Herzberg)

(c) Modern Management Theory (1950s onwards)

i. Systems and contingency approach
ii. Management science and operations research
iii. Use of computers and MIS
iv. Emphasis on total organisational effectiveness

3. LEVELS OF MANAGEMENT AND MANAGERIAL SKILLS

A. Levels of Management

(a) **Supervisory (Operational) Level**
i. Direct supervision of routine work

(b) **Middle Level**
i. Execution, supervision and monitoring

(c) **Top Level**
i. Policy formulation, planning, evaluation and resource mobilisation

B. Managerial Skills

(a) Technical Skill

i. Knowledge of methods, procedures and tools
ii. Most important at supervisory level

(b) Human Skill

i. Ability to understand, motivate and work with people
ii. Essential at all levels

(c) Conceptual Skill

i. Ability to view the organisation as a whole
ii. Most important at top level

(Other skills include diagnostic and analytical skills.)

4. MANAGERIAL FUNCTIONS

A. Planning

(a) Meaning
i. Deciding objectives and future course of action

(b) Steps in Planning
i. SWOT analysis
ii. Setting objectives
iii. Establishing premises
iv. Identifying alternatives
v. Evaluation and selection
vi. Budgeting

(c) Importance of Planning
i. Reduces uncertainty
ii. Provides direction
iii. Improves efficiency and control

B. Organising

(a) Meaning
i. Identification and grouping of activities

(b) Elements of Organising
i. Assignment of duties
ii. Delegation of authority
iii. Coordination of efforts

(c) Principles of Organising
i. Clear definition of duties
ii. Logical grouping of activities
iii. Balance between authority and responsibility

C. Staffing

(a) Meaning
i. Providing the right people at the right positions

(b) Components of Staffing
i. Recruitment and selection
ii. Training and development
iii. Performance appraisal
iv. Compensation and career planning

D. Directing

(a) Meaning
i. Leading and motivating employees

(b) Elements of Directing
i. Leadership
ii. Motivation
iii. Communication

E. Controlling

(a) Meaning
i. Ensuring performance according to standards

(b) Steps in Controlling
i. Setting standards
ii. Measuring performance
iii. Correcting deviations

5. OTHER MANAGERIAL FUNCTIONS

A. Coordinating

(a) Integration of activities towards common goals

B. Communicating

(a) Flow of information, ideas and instructions

C. Reporting

(a) Informing authorities and stakeholders about performance

D. Budgeting

(a) Financial planning, accounting and control

E. Innovating

(a) Developing new ideas, services and methods

F. Representing

(a) Acting as a link between the organisation and external agencies

1.6.1 Taylor's Principles of Scientific Management

Taylor emphasised replacing traditional practices with **scientific methods** to improve efficiency and productivity.

A. Core Principles

(a) **Replacing rule of thumb with science**
– Use organised knowledge instead of guesswork.
LIS example: Classifying books using **DDC or UDC** instead of placing them arbitrarily on shelves.

(b) **Harmony in group action**
– Promote cooperation rather than conflict.
LIS example: Coordination between acquisition, cataloguing, and circulation sections for smooth book processing.

(c) **Cooperation instead of individualism**
– Mutual trust between management and workers.
LIS example: Librarian and library assistants jointly planning user orientation programmes.

(d) **Maximum output**
– Aim for optimum productivity, not restricted output.
LIS example: Increasing daily book circulation and reference services through better workflow design.

(e) **Development of workers**
– Training staff to their fullest potential.
LIS example: Training library staff in **Koha**, digital repositories, and online databases.

1.6.2 Fayol's Principles of Management

Fayol proposed **14 flexible principles** applicable to all organisations, including libraries.

A. Principles with LIS Examples

(a) **Division of Work**
– Specialisation increases efficiency.
LIS example: Separate staff for acquisition, cataloguing, reference, and circulation.

(b) **Authority and Responsibility**
– Authority must match responsibility.
LIS example: A Section Head authorised to allocate duties is also responsible for section output.

(c) **Discipline**
– Obedience, respect, and adherence to rules.
LIS example: Observing library timings, issue–return rules, and service discipline.

(d) **Unity of Command**
– One employee should receive orders from one superior.
LIS example: A library assistant reporting only to the Librarian or Section In-charge.

(e) **Unity of Direction**
– One plan and one head for similar activities.
LIS example: A single collection development policy guiding all acquisitions.

(f) **Subordination of Individual Interest to General Interest**
– Organisational interest comes first.
LIS example: Library staff prioritising user services over personal convenience.

(g) **Remuneration**
– Fair and satisfactory compensation.
LIS example: Pay scales and incentives as per university or government norms.

(h) **Centralisation and Decentralisation**
– Balance between both.
LIS example: Policy decisions taken by Librarian, routine book issue handled at counters.

(i) **Scalar Chain**
– Clear chain of authority.
LIS example: University Librarian → Deputy Librarian → Assistant Librarian → Library Assistant.

(j) **Order**
– Right place for everything and everyone.
LIS example: Proper shelving, stack arrangement, and staff seating.

(k) **Equity**
– Kindness and justice in management.
LIS example: Fair duty rosters and equal training opportunities.

(l) **Stability of Tenure**
– Low staff turnover improves efficiency.
LIS example: Permanent library staff develop expertise in user services.

(m) **Initiative**
– Encouraging staff suggestions.
LIS example: Staff proposing a new reading corner or user feedback system.

(n) **Esprit de Corps**
– Team spirit and unity.
LIS example: Collective effort during stock verification or library events.

1.6.3 Barnard's Principles (Systems Approach)

Barnard viewed organisations as **cooperative systems** and emphasised human and social factors.

A. Key Ideas with LIS Examples

(a) **Need for Cooperation**
– Individuals cooperate due to physical and social limitations.
LIS example: Library staff working together to manage peak examination-time demand.

(b) **Cooperative System**
– Interaction of physical, biological, personal, and social elements.
LIS example: Integration of staff skills, library space, technology, and users.

(c) **Effectiveness and Efficiency**
– Achieving goals with minimum dissatisfaction.
LIS example: Providing timely reference service without overburdening staff.

(d) **Formal and Informal Organisation**
– Formal: planned structure; Informal: social interactions.
LIS example: Formal duty allocation vs informal peer support among staff.

(e) **Essentials of Formal Organisation**
i. Effective communication

ii. Willingness to cooperate
iii. Common purpose
LIS example: Staff meetings to discuss library goals and service improvement.

(f) **Elements of Formal Organisation**
i. Functionalisation (departments)
ii. Incentives system
iii. Authority system
iv. Logical decision-making
LIS example: Departmentalisation into technical and user services with clear authority.

(g) **Executive Functions**
– Integrating activities and balancing conflicting forces.
LIS example: Librarian balancing budget limits with user demands.

(h) **Leadership and Cooperation**
– Leadership sustains cooperation.
LIS example: Librarian motivating staff during digital transformation.

1.7 LIBRARY MANAGEMENT

1.7.1 Meaning of Library Management

Library management refers to the **efficient and effective management of information resources, machinery, manpower and money** to achieve the objectives of a library. It applies general management theories, principles and techniques **specifically to library situations**.

LIS example:
Managing books, e-resources, library software (Koha), staff, and budget to provide timely and quality services to users.

1.7.2 Components of Library Management

Library management covers different functional areas, each addressed in specialised blocks or units.

(a) **Management of Material (Information Resources)**
– Selection, acquisition, processing, storage and dissemination of information.
LIS example: Managing print books, journals, e-books, databases, theses, and institutional repositories.

(b) **Management of Machinery (Infrastructure & Equipment)**
– Buildings, furniture, ICT infrastructure and equipment.
LIS example: Library building layout, shelving, computers, OPAC terminals, RFID systems.

(c) **Management of Men (Human Resources)**
– Recruitment, training, motivation and development of staff.
LIS example: Training library staff in cataloguing standards, digital libraries and user services.

(d) **Management of Money (Finance)**
– Budgeting, accounting and financial control.
LIS example: Allocation of funds for books, journals, databases and maintenance.

1.7.3 Libraries as Service and Not-for-Profit Organisations

Although management principles apply to libraries, libraries differ from industrial organisations because they are **service-oriented, paternalistic and not-for-profit**.

LIS example:
A university library focuses on user satisfaction and academic support rather than profit generation.

1.7.4 Characteristics of Library Services

A. Fundamental Characteristics of Services

(a) **Intangibility (Impalpability)**
– Services cannot always be physically touched or seen.
LIS example: Reference and information services provided by a librarian.

(b) **Inseparability**
– Service production and consumption occur simultaneously with user participation.
LIS example: A user interacting with a librarian during reference consultation.

(c) **Heterogeneity (Variability)**
– Services cannot be completely standardised.
LIS example: Quality of reference service may vary with librarian expertise and user needs.

(d) **Perishability (Non-inventoriability)**
– Services cannot be stored for future use.
LIS example: An unused library orientation session cannot be stored and reused later.

1.7.5 Additional Characteristics of Not-for-Profit Service Organisations

(a) Difficulty in **measuring and comparing performance**
LIS example: Measuring impact of reference service or user satisfaction.

(b) Difficulty in **quality inspection and standardisation**
LIS example: Evaluating the quality of information guidance provided to users.

(c) Blurred relationship between **inputs and outputs**
LIS example: High expenditure on databases may not directly reflect in circulation statistics.

(d) Output is a mix of **physical facilities and human effort**
LIS example: Reading rooms plus librarian assistance.

(e) **No transfer of ownership**
LIS example: Users access information but do not own library resources.

(f) **Labour- and equipment-intensive**
LIS example: Professional librarians supported by ICT tools.

(g) Excellence is rare, mediocrity common, and dissatisfaction often unreported
LIS example: Users may silently stop visiting instead of complaining.

(h) Usually **small-scale and single-location** operations
LIS example: Departmental or college libraries.

(i) **Limited role of market forces**
LIS example: Library services funded by government or institutions, not market demand.

1.7.6 Roles of a Library Manager

Library management is achieved through managerial functions, skills and **managerial roles**.

A. Interpersonal Roles

(a) **Figurehead Role**
– Performing ceremonial and symbolic duties.
LIS example: Librarian inaugurating a book exhibition.

(b) **Leader Role**
– Motivating and guiding staff.
LIS example: Encouraging staff during implementation of digital library services.

(c) **Liaison Role**
– Maintaining external contacts.
LIS example: Coordinating with publishers, vendors and academic departments.

B. Informational Roles

(a) **Monitor Role**
– Scanning and monitoring information.
LIS example: Keeping track of new information technologies and databases.

(b) **Disseminator Role**
– Sharing information with staff.
LIS example: Informing staff about new cataloguing rules or policies.

(c) **Spokesperson Role**
– Communicating information to external stakeholders.
LIS example: Reporting library performance to university authorities.

C. Decisional Roles

(a) **Entrepreneur Role**
– Initiating change and innovation.
LIS example: Introducing institutional repository or RFID-based circulation.

(b) **Disturbance Handler Role**
– Solving unexpected problems.
LIS example: Handling system failure during examinations.

(c) **Resource Allocator Role**
– Allocating work and budget.
LIS example: Distributing budget among books, journals and e-resources.

(d) **Negotiator Role**
– Negotiating with stakeholders.
LIS example: Negotiating subscription rates with database vendors.

1.7.7 Modern Perspective of Library Management

Modern libraries are **dynamic service institutions**, not mere storehouses of books. Knowledge and information are as critical as energy and biotechnology, demanding **scientific and professional management**.

LIS example:
Use of management techniques like planning, budgeting, performance evaluation and MIS in academic and research libraries.

1.7.8 Application of Modern Management Techniques in Libraries

Modern management methods can be applied in areas such as:

(a) Collection development and resource sharing
(b) Workflow and process improvement
(c) Human resource development
(d) User studies and service evaluation
(e) Automation and digital library management

LIS example:
Applying operations research techniques to optimise staffing at circulation counters.

1.8 HUMAN RESOURCE MANAGEMENT (HRM)

1.8.1 Meaning of Human Resource Management

According to **Michael Armstrong** (2003),
Human Resource Management is a **strategic and coherent approach** to managing an organisation's **most valued asset—people**, who individually and collectively contribute to the achievement of organisational objectives.

LIS example:
Managing librarians, library assistants, IT staff, and support staff strategically to ensure effective library services.

1.8.2 Key Points Emerging from the Definition of HRM

(a) **Strategic and Coherent Approach**
– HRM is long-term, planned, and aligned with organisational goals.
LIS example: Long-term planning for recruiting digital librarians to support e-resources.

(b) **Human Resources as the Most Valued Asset**
– People are more valuable than physical or financial resources.
LIS example: Skilled reference librarians add more value than costly databases alone.

(c) **Individual and Collective Contribution**
– Organisational success depends on teamwork as well as individual effort.
LIS example: Cataloguers, circulation staff, and reference librarians working together to serve users.

1.8.3 HRM Policy Focus Areas

Top management must frame HR policies concentrating on the following:

(a) **Acquisition of Knowledge and Skills**
– Continuous learning and skill development.
LIS example: Training staff in MARC 21, RDA, Koha, and digital libraries.

(b) **Development of Inner Potential**
– Identifying and utilising hidden talents.
LIS example: Encouraging staff with IT skills to manage institutional repositories.

(c) **Organisational Work Culture**
– Teamwork, discipline, and effective communication.
LIS example: Smooth upward and downward communication between librarian and staff.

(d) **Facilities for Upgradation**
– In-service training, workshops, refresher courses.
LIS example: Sponsoring librarians for UGC-sponsored orientation programmes.

(e) **Strategic and Operational Planning**
– Improving competencies through planned execution.
LIS example: Annual staff development plan linked with library goals.

1.9 WHY HUMAN RESOURCE MANAGEMENT?

1.9.1 Need for HRM

Among all organisational resources, **human resources are unique**.

(a) **Living and Dynamic Resource**
– Capable of learning, adapting, and growing.
LIS example: Librarians adapting to new technologies like AI-based discovery tools.

(b) **Transforming Resource**
– Converts other resources into useful services.
LIS example: Staff using books and databases to provide reference and research support.

(c) **Knowledge and Control Resource**
– Builds future growth and reputation.
LIS example: Librarians enhancing the academic reputation of an institution through research support.

(d) **Culture-Building Resource**
– Creates organisational culture and strategy.
LIS example: Professional ethics and service culture in libraries.

1.9.2 Purpose of HRM

HRM exists to fulfil the following purposes:

(a) **Survival and Stability of the Organisation**
LIS example: Retaining trained librarians to ensure continuity of services.

(b) **Change and Diversification**
LIS example: Training staff to manage e-learning and digital resources.

(c) **Effective Functioning**
LIS example: Efficient circulation and reference services through trained manpower.

(d) **Quality in Products and Services**
LIS example: Accurate cataloguing and high-quality information services.

(e) **Leadership and Competitiveness**
LIS example: University libraries competing through better user services and innovations.

In essence, HRM focuses not only on competence and skills but also on **motivation, commitment, involvement, and participation** of employees.

1.10 HOW OF HUMAN RESOURCE MANAGEMENT?

1.10.1 Philosophical Approach to HRM

HRM views human resources as **assets to be nurtured**, not costs to be minimised. They must be continuously developed and reviewed in response to environmental changes.

LIS example:
Library staff upgrading skills to support new curricula, online teaching, and digital content.

1.10.2 Core Assumptions of HRM Philosophy

(a) **Investment in Human Resources**
– Spending on training and development is an investment.
LIS example: Funding staff training in digital librarianship.

(b) **Special Nature of Human Resources**
– Humans have free will and diverse behaviour.
LIS example: Different service styles of reference librarians.

(c) **Collective Focus**
– Managing staff as a group, not merely hiring and firing individuals.
LIS example: Team-based service counters and projects.

(d) **Human Resources as Organisational Strength**
– Only humans can foresee future needs and adapt.
LIS example: Librarians planning future collections based on emerging research trends.

1.10.3 Planning HRM for Changing Environments

HRM must align with organisational goals and changing environments through:

(a) Clear HR policy and objectives
(b) Strategic and operational planning
(c) Continuous skill upgradation
(d) Appropriate mechanisms and instruments

LIS example:
Developing a manpower plan to support automation, digitisation, and research data management.

1.14 PERFORMANCE APPRAISAL

1.14.1 Meaning

Performance appraisal is the **systematic evaluation of employees' job-related strengths and weaknesses** at all levels of an organisation. It provides a factual basis for decisions related to **increments, promotions, training, and career development**.

LIS example:
Evaluating a cataloguer on accuracy of MARC records and a reference librarian on quality of user guidance.

1.14.2 Nature of Performance Differences

Employees differ in initiative, reliability, and supervision needs.

(a) Some employees work independently with minimal supervision.
(b) Others require close supervision for task completion.

LIS example:
A senior librarian independently managing e-resources vs. a newly appointed staff member needing guidance.

1.14.3 Importance of a Systematic Appraisal System

A written appraisal system helps to:
(a) Distinguish levels of performance
(b) Identify excellence and deficiencies
(c) Ensure objectivity and fairness

LIS example:
Using annual confidential reports (ACRs) or performance indicators for library staff.

1.14.4 Use of Appraisal Data

Appraisal data is used for:
(a) Review and feedback
(b) Designing corrective programmes
(c) Improving efficiency and productivity

LIS example:
Recommending training in reference tools if appraisal reveals weak information search skills.

1.14.5 Appraisal at Higher Levels

Top and middle management personnel are also appraised, but with **different yardsticks**.

(a) Vision and leadership
(b) Professional updating
(c) Public relations and communication skills

LIS example:
Evaluating a University Librarian on policy initiatives, innovation, and institutional coordination.

1.15 ROLE ANALYSIS AND POTENTIAL DEVELOPMENT

1.15.1 Meaning of Role Analysis

Role analysis examines how effectively an employee performs a role in a given situation, considering **expectations, authority, skills, and behaviour**.

LIS example:
Handling difficult user complaint within library rules and professional ethics.

1.15.2 Components of Role Analysis

(a) **Optimum Stress**
– Encouraging performance without overburdening.
LIS example: Assigning manageable but challenging responsibilities to library staff.

(b) **Linkages**
– Intra- and inter-departmental relationships.
LIS example: Coordination between circulation and reference sections.

(c) **Autonomy**
– Freedom to use initiative.
LIS example: Allowing librarians to suggest new user services.

1.15.3 Potential Development

Potential development focuses on enhancing future capabilities of employees.

LIS example:
Preparing junior librarians for leadership roles through mentoring.

1.16 TRAINING POLICIES

1.16.1 Meaning

Training policies aim to **remove deficiencies and upgrade competencies** of staff through planned programmes.

1.16.2 Types of Training

(a) In-house training
(b) Workshops and refresher courses
(c) Short-term professional courses
(d) National and international programmes

LIS example:
Training library staff through workshops on digital libraries, RDA, and research databases.

1.16.3 Placement after Training

Trained employees should be placed appropriately to utilise their skills.

LIS example:
Posting a staff member trained in digitisation to the digital library section.

1.17 COMMUNICATION POLICIES

1.17.1 Importance of Communication

Formal communication maintains **discipline, transparency, and organisational health**.

1.17.2 Forms of Organisational Communication

(a) Circulars and office orders
(b) Staff meetings
(c) Newsletters and house journals

LIS example:
Publishing a library newsletter highlighting new services and staff achievements.

1.17.3 Benefits of Effective Communication

(a) Reduces rumours and grapevine
(b) Improves trust and morale
(c) Keeps staff informed

1.18 JOB ROTATION AND JOB ENRICHMENT

1.18.1 Job Rotation

Planned transfer of employees to different jobs to broaden experience.

LIS example:
Rotating staff between circulation, reference, and acquisition sections.

1.18.2 Job Enrichment

Enhancing job content to improve motivation and skills.

LIS example:
Allowing cataloguers to participate in collection development decisions.

1.19 PARTICIPATIVE MANAGEMENT

1.19.1 Meaning

Participative management is both a **philosophy and a method** where employees are respected and involved in decision-making.

1.19.2 Features of Participative Management

(a) Employee involvement
(b) Shared decision-making
(c) Collective responsibility

LIS example:
Taking staff suggestions while framing library user service policies.

1.19.3 Significance

Participative management improves:
(a) Commitment
(b) Productivity
(c) Quality of decisions

1.20 AWARDS, REWARDS, AND INCENTIVES

1.20.1 Meaning

Awards and incentives recognise **outstanding performance** and motivate employees.

1.20.2 Types of Incentives

(a) Professional awards
(b) Promotions and increments
(c) Training and international exposure

LIS example:
Nominating librarians for professional awards or sponsoring them for international conferences.

1.20.3 Caution in Incentive Use

Incentives must be judicious to avoid unhealthy competition.

LIS example:
Ensuring transparent criteria for awards to maintain harmony among library staff.

1.20.4 Outcome of Effective HRM

Proper implementation of HRM practices leads to:
(a) Higher productivity
(b) Organisational growth
(c) Better public image

LIS example:
A well-managed library gaining recognition for excellent user services.

Unit.2 Human Resource Management

1.21 HUMAN RESOURCE MANAGEMENT PROCESS

1.21.1 Meaning of HRM Process

The Human Resource Management (HRM) process is **continuous and dynamic**, not a one-time framework. It involves **planning, implementation, review, and improvement** of HRM practices to ensure **high-quality performance** from employees.

LIS example:
Continuous assessment and improvement of library staff performance through training, feedback, and role redesign.

1.21.2 HRM as a Continuous Process

HRM is not limited to design rules, procedures, or standards. It requires **ongoing application and review** of management ideas at all organisational levels.

(a) Periodic review of work-related issues
(b) Continuous improvement in work quality
(c) Attention at top, middle, and lower levels

LIS example:
Regular review of circulation efficiency, reference service quality, and digital services performance.

1.21.3 Quality-Centric Approach in HRM

Quality of work is central to HRM. Therefore, the following aspects need constant attention:

(a) **Task Analysis**
– Examining nature, scope, and methods of work.
LIS example: Analysing tasks of cataloguing staff for accuracy and speed.

(b) **Quality of Work Life (QWL)**
– Improving workplace conditions and job satisfaction.
LIS example: Ergonomic furniture and reasonable work schedules in libraries.

(c) **Democratic Principles in Implementation**
– Participation and fairness in decision-making.
LIS example: Consulting staff before changing library service timings.

(d) **Autonomous Work Groups (Quality Circles)**
– Small groups solving work-related problems.
LIS example: A team addressing delays in book processing.

(e) **Participative Decision-Making**
– Involving staff in operational decisions.
LIS example: Staff input in selecting new library software.

(f) **Quality Assurance of Services**
– Ensuring consistent service standards.
LIS example: Standard reference service guidelines.

1.21.4 Role of Organisational Culture

A **healthy and supportive organisational culture** promotes high performance and institutional success.

LIS example:
A service-oriented culture encouraging courteous user interaction and teamwork.

1.21.5 Organisational Learning

Organisational learning provides opportunities to acquire **new skills and experiences** through involvement and commitment.

LIS example:
Library staff learning new database platforms through hands-on use.

1.21.6 Integrated Nature of HRM Functions

Strategic planning, operational planning, performance measurement, and participative management must be viewed **as an integrated whole**, not in isolation.

LIS example:
Strategic plan to digitise collections supported by training, performance review, and staff participation.

1.21.7 Role of Top Management

Although responsibilities are shared across levels, **top management sets performance standards** and creates the environment for excellence.

LIS example:
University Librarian setting benchmarks for user satisfaction and service quality.

1.22 HRM AND INDIAN LIBRARIES AND INFORMATION CENTRES

1.22.1 Present Scenario

In India, most libraries function as parts of **academic institutions, government departments, research organisations, and PSUs**. HRM functions are largely handled by **parent organisations**.

LIS example:
University library staff governed by university service rules.

1.22.2 Limitations in Current Practice

(a) HR activities limited to salary, leave, discipline, and appraisal
(b) HRM concepts applied mainly at top levels
(c) Minimal focus on systematic personnel development

LIS example:
Performance appraisal through confidential reports without structured feedback.

1.22.3 Future Relevance of HRM in Indian LIS Sector

Despite present limitations, HRM concepts are highly relevant for the future due to:

(a) Growth of large academic and research libraries
(b) Automation, digitisation, and ICT applications
(c) Emergence of new LIS and knowledge management roles

LIS example:
Need for data librarians, digital curators, and systems librarians.

1.22.4 National and Professional Developments

The **National Knowledge Commission (2005)** recognised the strategic role of libraries in knowledge management, enhancing HRM relevance.

LIS example:
Strengthening library manpower to support national knowledge infrastructure.

1.22.5 Applicability of HRM Concepts

HRM practices such as training design, performance appraisal, career planning, and organisational culture are applicable to future Indian LIS environments.

LIS example:
Structured career progression for library professionals in research institutions.

1.23 SUMMARY

1.23.1 Unit Overview

This Unit discussed the **concept, need, process, and relevance of Human Resource Management**.

1.23.2 Key Points

(a) Human resources transform all other resources into services
(b) HRM ensures quality through planning and development
(c) Strategic and operational planning are core HRM tools
(d) HRM relevance will grow with technological and organisational changes

LIS example:
Effective HRM leading to high-quality library and information services.

1.24 KEY TERMS (SHORT NOTES)

1.24.1 HRM Process

– Systematic and continuous implementation of HRM practices.
LIS example: Ongoing staff training and appraisal in libraries.

1.24.2 Organisational Culture

– Shared values and practices shaping behaviour.
LIS example: User-first service culture.

1.24.3 Performance Appraisal

– Assessment of employee contribution.
LIS example: Annual evaluation of library staff.

1.24.4 Job Rotation

– Planned movement across jobs.
LIS example: Rotation between circulation and reference sections.

1.24.5 Strategic Planning

– Long-term HR and organisational planning.
LIS example: Planning future library manpower for digital services.

Unit.3. Financial Management

1. LIBRARY BUDGET AND FINANCIAL PLANNING

Meaning of Library Budget

A **library budget** is a **financial plan document** that estimates the **income and expenditure** of a library for a specific period, usually **one year**. It converts library goals and activities into **monetary terms (₹)** and acts as a tool for **planning, control, coordination, evaluation, and motivation**.

LIS example:
Preparing an annual budget covering books, journals, e-resources, staff salaries, automation, digitisation, and maintenance of a university library.

Objectives of Library Budget

- To balance **income and expenditure**
- To ensure **planned and controlled spending**
- To support **efficient utilisation of resources**
- To enable **evaluation of financial performance**

LIS example:
Allocating separate funds for print collections, e-databases, and institutional repository development.

Budget and Financial Report: Difference

Aspect	Budget	Financial Report
Time focus	Future-oriented	Past-oriented
Nature	Estimate and plan	Actual financial record
Purpose	Planning and control	Evaluation and accountability
LIS example	Proposed budget for next year	Annual expenditure statement

Importance of Budget in Library Management

- Guides expenditure according to priorities
- Communicates financial limits to staff
- Coordinates activities of different library sections
- Evaluates performance based on fund utilisation
- Motivate staff by approving funds for planned services

LIS example:
Sanctioning funds for starting a Current Awareness Service (CAS) or user orientation programme.

Limitations of Budgeting in Libraries

- Overemphasis on measurable outputs like circulation
- Difficulty in measuring service quality in monetary terms

- Risk of routine and rigid spending
- Needs frequent revision due to changing requirements

LIS example:
User satisfaction and research support quality cannot be directly measured in ₹.

Budgetary Methods and Techniques Used in Libraries

Method	Basic Idea	Advantages	Limitations	LIS Example
Line Item / Incremental Budget	Based on past expenditure with small increase	Simple and easy	Rigid, no performance focus	Annual book fund with 10% increase
Formula Budgeting	Uses norms like users or courses	Quick estimation	Ignores local needs	Budget based on student strength
Programme Budgeting	Funds linked to services/programmes	Service-oriented	Needs measurable workloads	Separate budget for CAS, SDI
Performance Budgeting	Based on efficiency and output	Focus on productivity	Quantity over quality	Cost per book catalogued
PPBS	Planning + programming + budgeting	Rational decision-making	Complex to implement	Comparing digitisation vs print expansion
Zero-Based Budgeting	Every activity justified from zero	Eliminates waste	Time-consuming	Justifying each library service annually

Budget as a Tool of Control and Motivation

A library budget:

- Controls expenditure through financial rules
- Communicates priorities and limits
- Helps evaluate performance
- Motivates staff by funding approved activities

LIS example:
Providing funds for training librarians in new databases and digital tools.

Practice in Indian Libraries

Most Indian libraries follow **traditional line-item budgeting**. Newer methods are being discussed but adopted slowly. Since library services are **continuous**, budgeting should improve efficiency **without disrupting essential services**.

LIS example:
Circulation and reference services must continue even when budget methods are revised.

2. BUDGETARY NORMS AND STANDARDS

Concept and Purpose

Budgetary norms and standards are guidelines proposed by professional experts, committees, and statutory bodies to support **financial planning, fund estimation, justification, and allocation** in libraries. They help libraries distribute limited funds rationally across competing needs while maintaining service quality.

LIS example:
Using recommended norms to justify increased funds for journals when subscription prices rise sharply.

Basis of Estimating Library Funds

Standards and norms underpin the estimation of library funds through commonly used approaches such as:

- **Per capita method** (based on number of users),
- **Proportional method** (linked to parent organisation's budget),
- **Method of details** (item-wise costing).

These approaches rely on accepted norms to ensure **objectivity and consistency**.

LIS example:
Estimating funds for an academic library based on student strength and number of courses supported.

Distribution of Library Budget: Major Items

The critical issue in budgeting is the **distribution of funds** among major expenditure heads—primarily **staff** and **library materials**—to generate effective services.

Suggested Norms by Ranganathan (University Libraries)

Expenditure Head	Percentage
Staff	50%
Books & other reading materials	40%
Miscellaneous	10%

LIS example:
Allocating half the budget to qualified staff to ensure quality reference and technical services.

UGC Library Committee (1957) Recommendation

For a university library serving **5,000 students and 500 teachers/researchers**, the suggested annual budget was **₹3,50,000**, with **equal allocation** for staff and materials.

Head	Allocation
Staff	₹1,75,000
Books, journals & reading materials	₹1,75,000

LIS example:
Balancing investments in staff expertise and collection strength.

General Norms Followed in University Libraries (India)

Expenditure Head	Percentage
Salaries & allowances	50%

Books	20%
Periodicals	13%
Binding	7%
Others (supplies, maintenance, etc.)	10%

LIS example:
Ensuring sustained journal access while maintaining binding and preservation needs.

Norms for Public Libraries

Expenditure Head	Percentage
Salaries & allowances	50%
Books	20%
Periodicals & newspapers	5%
Binding	5%
Others	20%

LIS example:
Higher allocation to "Others" to support outreach, mobile libraries, and community programs.

Key Observations on Library Budgeting

- **User-centric orientation:** Services and budgets must be aligned with assessed user needs.
- **Need-based budgeting:** Allocations should reflect actual service demand.
- **Unit cost analysis:** Calculating costs per operation (e.g., per book processed) is essential for scientific budgeting.
- **Cost accounting:** Still limited in practice; needed for rational fund allocation.
- **Pricing select services:** Some services (CAS, SDI, literature searches, document delivery) may be **partially priced or subsidised**, considering Indian conditions.

LIS examples:

- Pricing advanced literature searches for external users while subsidising students.
- Using unit cost data to argue for additional staff during peak semesters.

Concluding Note

Given escalating costs of materials, technology, and personnel, **library budgeting must evolve**—becoming more **scientific, innovative, and responsive** to changing user needs and service models.

3. METHODS AND TECHNIQUES OF FINANCIAL ESTIMATION

Concept of Financial Estimation in Libraries

Adequate and regular finance is essential for the success of any institution, including libraries. **Financial estimation** forms the foundation of proper library financing and determines **how much money is required, on what basis, and for what purposes**.

Financial requirements of a library depend on factors such as:

- Age and jurisdiction of the library
- Size and quality of collections
- Number and type of users
- Nature of services offered

LIS example:
Estimating funds for a newly established university library versus an old, well-developed research library.

Bases for Financial Estimation of Library Budgets

The following bases are commonly used while estimating library finances:

- User population and its composition
- Nature and type of materials to be acquired (print, e-resources, multimedia)
- Services proposed in relation to library objectives
- Unsatisfied service pressures (e.g. unmet demand for journals or databases)
- National and international standards for library services
- Inflation and rising cost of books, journals, and salaries

LIS example:
Increasing budget estimates due to rising subscription costs of e-journals.

Common Methods of Financial Estimation

Three major methods are generally used for estimating library finances.

Per Capita Method

Under this method, a **minimum amount per user** is fixed to provide standard library services. The estimate is usually based on the **total population served**, making it relatively simple and easy to apply.

Factors influencing per capita estimation

- Educational and cultural standards of the community
- Per capita income
- Cost of reading materials
- Salary structure of library staff

Selected Recommendations (Historical)

Authority	Students	Teachers
UGC Library Committee (1957)	₹15	₹200
Kothari Commission (1964–66)	₹25	₹300
Ranganathan	₹20	₹300

LIS examples:

- School library budget based on number of enrolled students
- University library funds estimated per student and per teacher

Limitations:
These norms are now **obsolete** due to inflation. Per capita figures must be periodically revised or linked to a **cost-of-living index**.

Proportional Method

This method allocates library funds as a **fixed percentage of the total budget** of the parent institution.

Recommended Proportions

Type of Institution	Suggested Allocation
University library	6.5% – 10%
College library	4% – 5%
Public libraries	6% – 10%

LIS examples:

- Allocating 5% of a college's annual expenditure to its library
- University libraries seeking enhanced share during expansion of academic programmes

Limitation:
This method may create **wide disparities**, especially for special libraries attached to high-budget institutions.

Method of Details

This is the **most comprehensive method**, where **all items of expenditure** are identified and estimated in detail.

Two Broad Categories of Expenditure

Type	Includes	LIS Example
Recurring (Current)	Salaries, books, journals, utilities	Annual journal subscriptions
Non-recurring (Capital)	Building, furniture, equipment	New library building or RFID system

Professional Recommendations

- Ranganathan suggested linking expenditure to **circulation and usage**
- UGC Library Committee (1957) proposed **staff formulae** and **per capita norms** for materials

LIS example:
Calculating exact staff salary requirements and separate estimates for books, journals, binding, and ICT.

Combining Methods for Better Estimation

In practice, a **combination of methods** often gives the most realistic estimates.

LIS example:
Using the proportional method for overall allocation, per capita norms for books, and method of details for staff and infrastructure.

Concluding Note

Financial estimation in libraries should be **scientific, flexible, and responsive** to changing user needs, technological developments, and economic conditions. Proper estimation ensures sustainable library services and effective utilization of funds.

Unit. 4 Reporting

1. Introduction

Statistics is a branch of mathematics concerned with the **collection, analysis, interpretation, and presentation of data**. Statistical methods help in explaining variations in data, assessing reliability, and making future projections.

In practical terms, statistics enables us to summarise large amounts of data into meaningful indicators.

Common statistical measures

Measure	Meaning
Mean	Average value of the data set
Median	Middle value of the data set
Mode	Most frequently occurring value
Standard Deviation	Degree of variation from the mean
Range	Difference between highest and lowest value

LIS context:
Libraries use these measures to analyse circulation data, user footfall, collection usage, and service performance.

Libraries are **service-based organisations** operating on allocated budgets from governments, institutions, grants, donations, and membership fees. Since public money is invested, stakeholders expect **measurable benefits**. Libraries return value to society through **direct benefits** (users) and **indirect benefits** (knowledge diffusion).

Statistics plays a crucial role in:

- Measuring library benefits
- Conducting **cost–benefit analysis**
- Justifying library budgets
- Supporting policy and funding decisions

This module focuses on **measuring library value**, **tools for measurement**, and **effective reporting** to authorities.

2. Library Statistics and Reporting

Statistics refers to methods dealing with **quantitative information** involving data collection, analysis, presentation, and interpretation. It is a vital decision-making tool.

Library statistics include **quantitative and qualitative data** related to:

- Library services
- Library usage
- Library users

They help in demonstrating the **value and impact** of libraries.

LIS example:
Annual statistics showing growth in e-resource usage and reference queries.

3. Need of Library Statistics and Reporting

Library statistics provide multiple managerial and strategic benefits.

Major benefits

- Essential for **effective library management**
- Support **policy decisions and strategic planning**
- Help promote library services to stakeholders
- Reveal hidden success stories of access and inclusion
- Show government and institutional commitment through input data
- Demonstrate cost-effectiveness by comparing inputs and outputs
- Indicate outcomes such as literacy improvement and information skills

LIS examples

- Using circulation data to justify additional book funds
- Using user data to expand digital services

Libraries now perform expanded roles in the digital environment, making **new statistics essential** for managing and promoting these services.

4. Role of Library Statistics in Management

Library statistics play a pivotal role in:

- Determining **library growth**
- Planning and controlling activities
- Comparing past and present performance
- Evaluating staff efficiency
- Preparing annual reports
- Benchmarking services with other libraries

LIS example:
Comparing year-wise circulation to evaluate the impact of a new reading programme.

5. Sources of Library Statistics

Statistical data can be generated from **almost every section** of a library.

Internal library sources

Library Section	Type of Data
Acquisition	Documents purchased and accessioned
Processing	Books catalogued, classified, barcoded
Circulation	Issues and returns
Periodicals	Usage of print and e-journals
Reference	User satisfaction and queries handled

Other sources

- Diaries
- Gate registers
- Daily/weekly/monthly reports
- Written library records
- Library management software

LIS example:
Using OPAC and circulation module data from Koha for monthly reports.

6. Quality of Library Statistics

The usefulness of statistics depends on **data quality**. Correct, reliable, and comparable data are essential.

Key characteristics of quality library statistics

- Accuracy and timeliness
- Data collection at macro and micro levels
- Use of predefined questionnaires
- Adequate sample size
- Proper grouping, formatting, and presentation

LIS example:
Using standard survey tools to measure user satisfaction and service impact.

7. Types of Library Statistics

Library statistics are broadly classified into **two main types** based on the focus of data collection and analysis:

- **Use studies**
- **User studies**

These two types together provide a **comprehensive picture** of how library resources and services are utilised and how users perceive them.

Use Studies and User Studies in Libraries

Aspect	Use Studies	User Studies
Focus	Use of library resources	Behaviour, needs, and feedback of users
Nature	Resource-centred	User-centred
Data collected	Frequency and pattern of use	Opinions, satisfaction, expectations
Purpose	To assess utilisation of collections and services	To improve services based on user needs

Examples of data collected

- Use studies: books issued, database hits, journal usage
- User studies: library visits, satisfaction levels, service preferences

Use Studies

Use studies examine the **usage pattern of library resources**, such as books, periodicals, AV materials, and electronic resources.

Typical questions addressed

- How many times a database is accessed?
- How many books are issued in a month?
- Which journals are most frequently consulted?
- How often are CDs/DVDs or AV materials used?

LIS examples (4–5):

- Analysing monthly circulation data to identify high-demand subject areas
- Tracking e-journal download statistics to decide subscription renewal
- Measuring usage of reference books to plan multiple copies
- Studying OPAC search logs to improve subject access
- Analysing usage of institutional repository downloads

User Studies

User studies focus on **library users rather than resources**. These studies analyse how users interact with the library and how satisfied they are with services.

Typical questions addressed

- How many users visited the library last month?
- Which service is considered most important by users?
- How can e-services be improved?
- What is the overall satisfaction level of users?

LIS examples (4–5):

- Conducting a user satisfaction survey for reference services
- Analysing footfall data to extend library working hours
- Collecting feedback on usability of library website and OPAC
- Studying information-seeking behaviour of research scholars
- Surveying students to improve orientation and user education programmes

Importance of Combining Use and User Studies

A combination of **use statistics** and **user feedback** enables better decision-making.

LIS examples (4–5):

- Linking low database usage with user feedback to plan training sessions
- Using circulation statistics along with surveys to improve collection development
- Evaluating staff performance through service usage and user satisfaction data
- Justifying additional budget based on high usage and positive feedback
- Redesigning services based on declining usage and user suggestions

8. Concepts of Statistics

Statistics provides the **tools and methods** required to analyse library data and present meaningful conclusions.

What is Statistics?

Statistics is the **methodology of collecting, analysing, interpreting, and drawing conclusions from data**. It helps in estimating "true" values from limited observations and presents results in **probabilistic terms** (e.g., 95% confidence).

Important points:

- Statistics cannot prove facts absolutely
- Poor-quality data lead to poor conclusions ("garbage in, garbage out")

LIS examples (4–5):

- Estimating average daily library attendance
- Calculating mean circulation per user
- Measuring variation in monthly book issues
- Estimating growth trends in e-resource usage
- Analysing reliability of user satisfaction surveys

Why Use Statistics?

Statistics helps to **summarise large datasets**, identify patterns, and support evidence-based decisions.

Key purposes:

- Simplifies complex numerical data
- Reveals hidden patterns and trends
- Supports prediction and planning
- Separates probability from mere possibility

LIS examples (4–5):

- Identifying peak library usage hours
- Predicting future demand for e-resources
- Comparing effectiveness of old and new services
- Supporting strategic planning and funding proposals
- Demonstrating library impact to policy makers

9. Statistical Terms and Their Understanding

Population and Sample

- **Population**: The entire group of individuals or objects under study
- **Sample**: A subset selected from the population for observation

There is no fixed rule for sample size; it depends on population variability and desired precision.

LIS examples (4–5):

- Population: All public libraries in India; Sample: Selected libraries in Delhi
- Population: All library users; Sample: Research scholars surveyed
- Population: Entire collection; Sample: Newly acquired books
- Population: All staff; Sample: Circulation staff for performance study
- Population: All services; Sample: Reference service evaluation

Variables

A **variable** is a characteristic that varies from one individual or object to another.

Types of variables

Type	Description	LIS Examples
Quantitative	Numerical data	Number of books issued, downloads
Qualitative	Non-numerical data	User category, satisfaction level

Discrete variables: Countable values
Continuous variables: Measurable values on a scale

LIS examples (4–5):

- Discrete: Number of users visiting per day
- Discrete: Number of books catalogued
- Continuous: Time spent by users in library
- Continuous: Expenditure on journals
- Qualitative: Type of user (student, faculty, researcher)

Scales of Measurement

Variables are measured using different **scales**, which define their meaning.

Scale	Characteristics	LIS Examples
Nominal	Categories without order	User type, subject category
Ordinal	Ordered categories	Satisfaction level (low–high)
Interval	Equal intervals, no true zero	Temperature of reading room
Ratio	Equal intervals with true zero	Number of books, budget amount

LIS examples (4–5):

- Nominal: Department-wise user classification
- Ordinal: Ranking library services by preference
- Interval: Temperature settings in digital lab
- Ratio: Annual library budget in ₹
- Ratio: Number of database searches

10. Organization of the Data

When values of variables are observed for one or more persons or objects, they generate **data**.

- Each individual value is called an **observation**.
- A complete collection of observations for specific variables is called a **data set** or **data matrix**.

For ease of recording and analysis, **qualitative data are often coded numerically**. Even after coding, the nature of data does not change (nominal data remain nominal).

LIS examples (4–5):

- Coding library user type as 1 = Daily, 2 = Weekly, 3 = Monthly, 4 = Occasional
- Coding user category as 1 = Student, 2 = Faculty, 3 = Research Scholar
- Coding satisfaction level as 1 = Low, 2 = Medium, 3 = High
- Coding department names into numeric codes for SPSS analysis
- Coding mode of access as 1 = Print, 2 = Online, 3 = Both

Data Matrix

Data are commonly arranged in a **matrix form**:

- **Columns** represent variables
- **Rows** represent observations (sampling units)

LIS examples (4–5):

- Rows = individual users; Columns = visits, books issued, database use
- Rows = months; Columns = circulation, footfall, e-resource usage
- Rows = staff members; Columns = books processed, queries handled
- Rows = departments; Columns = book demand, journal usage
- Rows = years; Columns = budget, collection size, user count

11. Frequency Distribution of Variables

Qualitative Variables

The number of observations falling into a particular category is called its **frequency**.
A table listing categories and their frequencies is called a **frequency distribution**.

Relative frequency expresses frequency as a proportion of total observations.

$$\text{Relative Frequency} = \frac{\text{Frequency of the class}}{\text{Total observations}} \times 100$$

Relative frequencies sum to **100% (or 1)**.

Cumulative frequency is obtained by successively adding frequencies.
It is meaningful **only for ordinal variables**, not nominal ones.

Example: Library User Types (40 users)

User Type	Frequency	Percentage
Regular	16	40
Monthly	18	45
Weekly	4	10
Occasional	2	5
Total	**40**	**100**

LIS examples (4–5):

- Identifying dominant user type for service planning
- Adjusting opening hours based on regular users
- Designing orientation programs for occasional users
- Evaluating membership engagement

- Justifying reading room expansion

Quantitative Variables

Quantitative data can also be summarised using frequency distributions.

- If values are **few and discrete**, they can be tabulated directly
- If values are **many or continuous**, data must be grouped into **class intervals**

Steps in grouping data

- Identify minimum and maximum values
- Decide class intervals of equal width
- Count frequencies in each class
- Compute relative and cumulative frequencies

Generally, **5–15 class intervals** are adequate.

Example: Age Distribution of Library Users (102 users)

Age Range	Frequency	Percent	Cumulative Percent
18–22	6	5.9	5.9
23–27	10	9.8	15.7
28–32	14	13.7	29.4
33–37	11	10.8	40.2
38–42	19	18.6	58.8
43–47	8	7.8	66.7
48–52	12	11.8	78.4
53–57	12	11.8	90.2
58–62	4	3.9	94.1
63–67	2	2.0	96.2
68–72	4	3.9	100.0
Total	**102**	**100.0**	

LIS examples (4–5):

- Designing services for dominant age groups
- Planning ICT training for senior users
- Adjusting furniture and facilities
- Creating targeted outreach programs
- Supporting inclusive library services

12. Central Tendency and Deviation

Frequency distributions reveal the **shape and concentration** of data.
Measures of **central tendency** describe the “center” of the distribution.

Mode

The **mode** is the most frequently occurring value.
A distribution may be **unimodal, bimodal, or multimodal**.

LIS examples (4–5):

- Most common user type (e.g., Monthly users)
- Most used database
- Most circulated subject category
- Most preferred service
- Peak usage day

Median

The **median** divides data into two equal halves.
It represents the **50th percentile**.

Median position = (N + 1) / 2

Medians are **less affected by extreme values**.

LIS examples (4–5):

- Median daily footfall
- Median number of books issued per user
- Median response time for reference queries
- Median age of library users
- Median expenditure per year

Mean

The **mean** is the arithmetic average:

$$\text{Mean} = \frac{\Sigma X}{N}$$

It is **sensitive to extreme values (outliers)**.

Illustration:

- Extreme values can distort the mean but not the median.

LIS examples (4–5):

- Mean daily circulation
- Mean expenditure per user

- Mean database searches per month
- Mean processing time per book
- Mean attendance in user education programs

13. Measures of Spread

Measures of central tendency (mean, median, mode) explain **where data are centered**, but they do not explain **how data are spread or dispersed**.
Measures of spread (variability) describe the extent to which individual observations **cluster around or deviate from the average**.

Range

The **range** is the simplest measure of variability.

Definition
Range = Highest value − Lowest value

Characteristics

- Easy to calculate
- Based only on extreme values
- Highly unstable and sensitive to outliers
- Does not represent overall variability effectively

LIS examples (4–5):

- Range of daily library footfall (highest vs lowest day)
- Range of annual circulation figures over a year
- Range of ages of library users
- Range of expenditure on books across departments
- Range of database usage counts in a month

Variance

The **variance** measures variability based on **deviations of each value from the mean**.

Because simple deviations sum to zero, deviations are **squared** before averaging.

Concept

- Compute deviation of each value from the mean
- Square each deviation
- Sum squared deviations
- Divide by **N** (population) or **N − 1** (sample)

Variance represents the **average squared deviation** from the mean.

Limitations

- Expressed in **squared units**, making interpretation difficult

LIS examples (4–5):

- Variance in number of books issued per day
- Variance in monthly e-resource downloads
- Variance in time taken to process books
- Variance in staff workload across sections
- Variance in annual budget utilisation

Standard Deviation

The **standard deviation** is the **positive square root of the variance**.
It expresses variability in the **same units as the original data**, making it more interpretable.

Key points

- Indicates average deviation from the mean
- Smaller SD → data clustered closely
- Larger SD → data widely dispersed

In a **normal distribution**:

- About **68%** of values lie within ±1 SD of the mean
- SD ≈ 1/4 of the range for small samples (N < 30)
- SD ≈ 1/5 to 1/6 of the range for large samples (N > 100)

LIS examples (4–5):

- Standard deviation of daily circulation
- Standard deviation of user satisfaction scores
- Standard deviation of monthly footfall
- Standard deviation of database usage frequency
- Standard deviation of processing time per document

14. Data Collection for Library Statistics

Libraries collect data mainly from **use studies** and **user studies**.
While usage data require **structured recording formats**, user-related data often need **survey and feedback tools**.

Sources of Library Usage Data

Library usage data are routinely collected from the following sources:

- Gate register
- Circulation counter
- Shelving and reshelving records
- Database usage statistics (library system and publishers' platforms)
- Accession register
- Financial records (books, journals, furniture, repairs, etc.)
- Electronic services generated (OPAC searches, IR downloads, CAS alerts)

Data are recorded on a **daily, weekly, monthly, and annual basis** for analysis and reporting.

LIS examples (4–5):

- Daily gate count to analyse footfall trends
- Monthly circulation data to evaluate collection use
- E-journal usage reports from publishers
- Accession statistics to track collection growth
- Financial data to support budget proposals

Collection of User Statistics

Unlike use statistics, **user statistics** require direct interaction with users.

Common methods

- Questionnaires and surveys
- Interviews
- Feedback forms
- Online feedback tools
- Observation studies

These methods help measure:

- User satisfaction
- Usefulness of services
- Service gaps and expectations

LIS examples (4–5):

- User satisfaction survey for reference services
- Feedback on usability of OPAC and library website

- Survey on effectiveness of user orientation programs
- Assessment of e-resource training impact
- Evaluation of overall library service quality

15. Data Collection Methods

Data collection is a core component of research and library statistics. It is a **complex and demanding task**, and there is no single "best" method applicable to all situations. The choice of a data collection method depends on:

- Research objectives
- Nature of data required
- Advantages and limitations of each method

Libraries collect data from multiple sources such as documents, records, workplaces, the Internet, surveys, and interviews.

LIS examples (4–5):

- Collecting circulation data from library software
- Gathering user feedback through surveys
- Using gate registers to record footfall
- Analysing database usage statistics from publishers
- Studying reference queries through service logs

Observation Method

Observation is a method of collecting data by **watching behaviours, events, or physical characteristics** in their natural settings.

Types of observation

- **Overt**: Users know they are being observed
- **Covert**: Users do not know they are being observed
- **Direct**: Observing behaviour as it happens
- **Indirect**: Observing outcomes of behaviour

LIS examples (4–5):

- Observing how users search OPAC for books
- Watching user behaviour in reference section
- Monitoring use of reading rooms during peak hours
- Counting number of books consulted at the end of the day
- Observing user interaction with self-check kiosks

When observation method is suitable

- To understand ongoing processes
- To study individual or group behaviour
- To examine physical settings
- When direct questioning is impractical

Key steps in observation

- Define evaluation questions clearly
- Decide focus areas for observation
- Design recording tools (checklists, recording sheets)
- Use observation guides or field notes
- Select representative sites and trained observers
- Decide appropriate timing for observations

Interview Method

An **interview** is a systematic way of collecting data through **direct conversation**. The interviewee is the primary source of data; the researcher's views are not important.

Key features

- Suitable for collecting **in-depth information**
- Allows probing and clarification
- Does not require respondents to be literate
- Requires trained staff, time, and quiet space

LIS examples (4–5):

- Interviewing research scholars about database needs
- Interviewing faculty about journal requirements
- Conducting exit interviews with library users
- Interviewing staff about workflow challenges
- Interviewing users about satisfaction with digital services

Preparation before interview

- Explain purpose and importance of interview
- Clarify time, place, and duration
- Seek permission for recording

- Provide basic information about the study

Skills required by interviewer

- Active listening
- Non-judgmental attitude
- Good memory
- Ability to think quickly and adapt

Types of interviews

- **Structured**: Same predefined questions for all
- **Semi-structured**: Key themes with flexible order
- **Unstructured**: Informal and conversational
- **Non-directive**: Interviewee leads the discussion

Questionnaire Method

A **questionnaire** is used to collect data on **opinions, attitudes, experiences, and perceptions** that are not directly observable.

Advantages

- Suitable for large populations
- Cost-effective and time-saving
- Can include open-ended and close-ended questions
- Can be administered online or in print
- Minimal staff and infrastructure required

Disadvantages

- Limited depth of responses
- No scope for probing
- Requires literacy
- Risk of misunderstanding questions
- Responses may not reflect actual behaviour

LIS examples (4–5):

- User satisfaction survey
- Feedback on library website usability
- Survey on effectiveness of user education programs

- Questionnaire on preferred library services
- Survey on awareness of e-resources

Characteristics of a Good Questionnaire

A good questionnaire should be:

- Specific and objective
- Short and concise
- Simple and clear in language
- Logically arranged
- Attractive and easy to handle
- Free from unnecessary personal questions
- Accompanied by clear instructions

Steps in Developing an Effective Questionnaire

- Define research objectives clearly
- Identify and select sample population
- Design questionnaire carefully (simple, unbiased, logical)
- Use appropriate scales (e.g., Likert scale)
- Pilot test with a small group
- Revise based on feedback
- Prepare a clear cover letter
- Follow up with non-respondents
- Analyse data using qualitative or quantitative techniques

LIS examples (4–5):

- Pilot testing a student satisfaction survey
- Using Likert scale to measure service quality
- Conducting online surveys via Google Forms
- Following up non-respondents through email reminders
- Analysing questionnaire data for annual library reports

16. Data Quality: LibQUAL+

LibQUAL+ is a standardized **service quality assessment tool** used by libraries to **collect, analyse, and act upon users' perceptions** of library services. It is offered by the **Association of Research Libraries (ARL)** and is widely adopted by academic and research libraries across the world.

At the core of LibQUAL+ is a **rigorously tested web-based survey**, supported by training modules, which helps libraries:

- assess service quality,
- improve user satisfaction,
- support evidence-based decision making, and
- strengthen organisational culture.

Goals of LibQUAL+

- Foster a **culture of excellence** in library services
- Understand **user perceptions** of service quality
- Collect and analyse feedback **systematically over time**
- Enable **comparison with peer institutions**
- Identify **best practices** in library services
- Enhance **analytical skills** of library staff

Benefits of LibQUAL+ for Libraries

- Provides institutional data to evaluate whether services meet user expectations
- Enables benchmarking through **aggregate peer comparison reports**
- Helps identify service gaps and priority areas
- Supports **resource allocation and budget justification**

LIS examples (4–5):

- Using LibQUAL+ results to justify extended library hours
- Identifying low satisfaction in e-resources access and improving authentication systems
- Comparing service quality scores with similar universities
- Allocating funds to improve staff responsiveness based on survey gaps
- Using longitudinal LibQUAL+ data to track service improvement over years

17. Data Collection Formats

Libraries use **structured data collection formats** to gather consistent and analysable statistical information. The number and type of formats vary depending on:

- nature of the library,
- services offered,
- user population, and
- usage patterns.

Most formats are designed in line with **statistical software requirements (e.g., SPSS)** to facilitate analysis.

18. Data Collection through Library Usage Study

Library usage studies focus on **who uses the library, how often, and which resources are used**. Below are **illustrative formats** commonly used in libraries.

Sample Format 1: Professional Configuration of Users

Sr. No.	User Category	No. of Users	Percentage
1	Students		
2	Researchers		
3	Professionals		
4	Academicians		
5	Others*		

*Others include consultants, library personnel, trainees, professional-cum-researchers, librarians.

LIS examples (4–5):

- Identifying dominant user group for collection development
- Planning specialised services for researchers
- Designing orientation programs for students
- Supporting professional users with industry databases
- Reporting user diversity to funding agencies

Sample Format 2: Frequency of Library Visits

Sr. No.	Period	Frequency	% of Total Users
1	Regularly		
2	Weekly		
3	Monthly		
4	When Needed (WN)		
5	**Total**		100

LIS examples (4–5):

- Extending library hours for regular users
- Planning outreach for occasional users
- Evaluating impact of digital access on physical visits
- Justifying staffing patterns
- Comparing pre- and post-automation usage

Sample Format 3: Types of Information Consulted

Sr. No.	Information Type	No. of Users	% of Total
1	Articles / Papers		
2	Subject-specific information		
3	Newspapers		
4	Value-added analysis		
5	Statistical information		
6	Study material		
7	Books		
8	AV documents		

LIS examples (4–5):

- Increasing journal subscriptions based on article usage
- Developing value-added information services
- Strengthening newspaper and current affairs sections
- Expanding AV and multimedia collections
- Supporting exam-oriented study material demand

Sample Format 4: Knowledge Resources Referred

Sr. No.	Resource Type	No. of Users	% of Total
1	**Books**		
2	**Journals / Newsletters**		
3	**Databases**		
4	**Newspapers**		
5	**AV Materials**		
6	**Others***		

*Others include CDs, reports, pamphlets, reference documents.

LIS examples (4–5):

- Balancing print and electronic collections
- Deciding journal renewal priorities
- Promoting underused databases
- Improving AV facilities
- Supporting research and project work

Sample Format 5: Types of Databases Used

Sr. No.	Database Type	No. of Users	% of Total
1	ScienceDirect		
2	JSTOR		
3	SpringerLink		

4	Business Databases		
5	Government Databases		
6	Scopus		
7	CMIE		
8	Infraline		
9	Others (Multiple users)		
10	Others (Single user)		
11	**Total**		100

LIS examples (4–5):

- Cancelling low-usage databases
- Negotiating licenses based on usage statistics
- Planning database training sessions
- Supporting subject-specific research needs
- Preparing evidence-based budget proposals

19. Significance of Standardised Data Formats

Standardised data collection formats:

- ensure **accuracy and consistency**,
- enable **comparability over time**,
- support **statistical analysis**, and
- strengthen **reporting and accountability**.

They play a crucial role in **performance evaluation, service improvement, quality assurance, and strategic planning** in libraries.

20. User Data Collection through Questionnaire

When a library intends to collect **user-centric data**, a **questionnaire** is the most commonly adopted tool. Questionnaires are designed by following standard research steps and are then distributed to users in one or more of the following ways:

- Printed copies kept at the library
- Distribution through post, e-mail, or institutional mailing lists
- Online survey tools and web-based forms

The collected data are coded and analysed using statistical software such as **SPSS** or **MS Excel**, and results are presented in tabular and graphical formats.

Sample Table 6: Users' Satisfaction Level with Library Services

Sr. No.	Level of Satisfaction	No. of Users	% of Total
1	Mostly Satisfied		
2	Fully Satisfied		

3	Often Satisfied (OS)		
4	Not Satisfied (NS)		
5	**Total**		**100.00**

LIS examples (4–5):

- Measuring overall satisfaction with circulation services
- Identifying dissatisfaction with e-resources access
- Comparing satisfaction before and after automation
- Supporting quality audits and accreditation
- Improving user services based on feedback

Sample Table 7: Response against Benefits Derived from Databases

Key indicators:

- TSIRP – Time Saver in Information Retrieval Process
- ADC – Accuracy of Data Collected
- COD – Comprehensiveness of Database
- QRC – Quality of Records Collected
- DWANDA – Difficult-to-Access Data Availability
- UFIDF – User-Friendly Interface and Display Format
- UDR – Updated Data Regularly

General observations from database-related surveys:

- Databases help libraries develop **new services**
- User satisfaction increases after adding **e-resources**
- Trained staff handle users more efficiently
- Growth of digital collections increases user footfall
- Average user time spent on information search reduces

21. Data Representation and Reporting Formats

Library data may be **qualitative** or **quantitative**. Depending on the data type, suitable tables and graphs are selected for clear communication.

Essential Characteristics of Good Data Representation

- Accurate depiction with minimal distortion
- Compact presentation of large datasets
- Easy visual comparison

- Clear purpose and interpretation
- Strong linkage with tables and textual explanation

Graphical Representation of Qualitative Data

- **Pie Charts** – best suited for nominal data
- **Horizontal / Vertical Bar Graphs** – suitable for ordinal data

In a pie chart, the angle for each class is calculated as:
Relative frequency × 360°

In bar graphs, bars do **not touch each other**, and height/length represents frequency or percentage.

Graphical Representation of Quantitative Data

- **Histogram** – used for grouped continuous data (bars touch)
- **Bar Graph** – used for discrete quantitative data
- **Line Graph** – used for time-series or annualised data
- **Area Graph** – shaded form of line graph showing cumulative trends

LIS examples (4–5):

- Monthly circulation statistics using histograms
- Year-wise user visits using line graphs
- Growth of e-resource usage through area graphs
- Department-wise service comparison using bar graphs
- Budget utilisation trends using line graphs

22. Application of Statistics in Libraries

Libraries have long used statistics to **describe, evaluate, and improve** their services. With the help of tools such as **MS Excel, SPSS, and LibQUAL+**, librarians can analyse operational and user data effectively.

In statistical software:

- **Columns** represent variables (e.g., user type, visit frequency)
- **Rows** represent observations (users, transactions, visits)

Data entry follows a structured process, and regular saving of files is essential to avoid data loss.

Sample Table: Frequency of Library Users' Visits

Sr. No.	Period	Frequency	% of Total Users
1	Regularly	53	51.5
2	Weekly	6	5.8
3	Monthly	7	6.8
4	When Needed (WN)	37	35.9

5	**Total**	103	**100.00**

LIS applications (4–5):

- Adjusting library timings
- Planning staffing schedules
- Justifying budget allocation
- Monitoring service demand
- Comparing usage trends annually

Frequency Distribution of Overall User Satisfaction Scores

Score	Count	%	Cumulative %
3	1	3.4	3.6
5	1	3.4	7.1
6	2	6.9	14.3
7	3	10.3	25.0
8	9	31.0	57.1
9	8	27.6	85.7
10	4	13.8	100.0

Mean = 8.04 | N = 28 | Standard Deviation = 1.598

This distribution indicates **high user satisfaction**, with most responses clustered around scores 8 and 9. Mean scores are particularly useful for **year-to-year comparison**, as they reflect service improvements more sensitively than median values.

23. Summary

Statistics function as a **strategic and economic tool** for libraries. Through systematic data collection, analysis, and reporting, libraries can:

- measure performance and service quality,
- demonstrate value to stakeholders,
- support evidence-based budgeting, and
- guide future planning and development.

Well-presented statistical evidence enables policymakers, funding agencies, and patrons to make **informed decisions** about the growth, relevance, and sustainability of libraries in society.

Unit 5 System Analysis and Design

1. Introduction to System

The term **system** is derived from the Greek word *systema*, which means an **organized relationship among functioning units or components**. A system exists because it is deliberately designed to achieve one or more objectives.

According to **Elias M. Awad**, a system is *"an orderly grouping of interdependent components linked together according to a plan to achieve a specific objective."*

In the **library context**, a library system consists of several interrelated components such as:

- collection,
- circulation system,
- cataloguing system,
- classification system,
- reference and information services.

All these components are **interdependent and coordinated** with the central objective of providing the **right information to the right user at the shortest possible time**.

2. Characteristics of a System

All systems, whether library systems, accounting systems, transportation systems, or medical systems—share certain common characteristics.

2.1 Organized Structure

Every system has a **defined structure and order**. Components are arranged hierarchically to achieve specific objectives.

In a library system, the hierarchy generally flows from:

- Chief Librarian
- Deputy Librarian
- Assistant Librarians
- Library Assistants and Clerks

This structure:

- establishes system–subsystem relationships,
- defines authority and responsibility,
- formalizes the chain of command,
- ensures smooth communication flow.

LIS examples (4–5):

- Organisational hierarchy in a university library
- Department-wise division: acquisition, circulation, reference
- Defined reporting structure for library staff
- Workflow sequence from acquisition to circulation
- Responsibility mapping in library automation

2.2 Interaction among Components

System components **interact continuously** with each other. Interaction refers to the way one component influences or supports another.

In libraries:

- circulation interacts with users,
- acquisition interacts with cataloguing and classification,
- reference services interact with collections and users.

LIS examples (4–5):

- Circulation data influencing acquisition decisions
- Cataloguing records used by OPAC for retrieval
- Reference queries guiding collection development
- User feedback interacting with service design
- Digital services interacting with traditional services

2.3 Interdependence of Components

Interdependence means **no subsystem can function independently**. The output of one subsystem becomes the input of another.

For example:

- circulation cannot operate without acquired and processed books,
- reference services depend on catalogued and classified resources.

LIS examples (4–5):

- Acquisition → Cataloguing → Circulation workflow
- E-resource licensing affecting digital access services
- Classification enabling effective shelving and retrieval
- Bibliographic records supporting reference queries
- User services dependent on technical processing

2.4 Integration of Components

Integration refers to how well the system components are **tied together**. Even though each component performs a unique function, all parts work together as a whole.

Effective integration produces a **synergistic effect**, meaning the combined output is greater than the sum of individual efforts.

LIS examples (4–5):

- Integrated Library Management Systems (ILMS)
- Single OPAC integrating print and electronic resources
- Unified user database for all library services
- Integration of circulation and acquisition modules
- Seamless access between physical and digital collections

2.5 Central Objective

Every system operates to achieve a **central objective**.

The **central objective of a library system** is:

- to satisfy the **information needs of users** efficiently and effectively.

LIS examples (4–5):

- Providing timely access to scholarly information
- Supporting teaching, learning, and research
- Ensuring equitable access to information
- Enhancing user satisfaction
- Facilitating knowledge discovery

3. Elements of a System

A system is composed of several essential elements that work together.

3.1 Inputs and Outputs

- **Inputs** are elements that enter the system for processing.
- **Outputs** are the results produced after processing.

In system design, identifying outputs is the first step, as it determines the nature and quantity of inputs required.

LIS examples (4–5):

- Input: books ordered → Output: books issued
- Input: user query → Output: reference answer
- Input: bibliographic data → Output: catalogue record
- Input: e-resources → Output: online access

- Input: feedback → Output: service improvement

3.2 Processors

Processors are the **operational components** that transform inputs into outputs.

In libraries, processors include:

- cataloguing,
- classification,
- indexing,
- circulation transactions.

LIS examples (4–5):

- Cataloguing transforming books into searchable records
- Classification assigning call numbers
- Indexing journal articles
- Digitization converting print to digital format
- Data processing in ILMS

3.3 Control

Control is the **decision-making element** that governs inputs, processing, and outputs. It ensures that the system operates within defined standards.

LIS examples (4–5):

- Library policies regulating circulation
- Budget control over acquisitions
- Access control for digital resources
- Quality control in cataloguing
- Administrative monitoring of services

3.4 Feedback

Feedback measures system performance against standards and provides information for corrective action.

Feedback can be:

- **positive**, reinforcing good performance, or
- **negative**, indicating the need for improvement.

LIS examples (4–5):

- User satisfaction surveys

- Circulation statistics analysis
- Feedback on OPAC usability
- Complaint registers
- Usage analytics of e-resources

3.5 Environment

The environment consists of **external factors** that influence the system's functioning.

For libraries, the environment includes:

- publishers,
- booksellers,
- parent institutions,
- technological changes.

LIS examples (4–5):

- Publisher pricing policies
- Institutional academic programmes
- Government regulations
- Technological advancements
- User community expectations

3.6 Boundaries and Interfaces

System boundaries define **what the system includes and excludes**, while interfaces enable interaction with other systems.

For example:

- the circulation system handles issue and return but not acquisition,
- However, it can provide input data for acquisition decisions.

Understanding boundaries is crucial in **system analysis and design**.

LIS examples (4–5):

- Circulation interface with OPAC
- Acquisition interface with vendors
- Digital library interface with users
- Inter-library loan interfaces
- Library system interface with institutional ERP

4. Systems Analysis Methodologies

Systems development has two closely related components: **systems analysis** and **systems design**.

- **Systems design** focuses on planning a new system or improving/replacing an existing one.
- **Systems analysis** precedes design and concentrates on understanding the current system, identifying problems, and determining how improvements can be achieved—often with the aid of computers and information technologies.

Systems analysis is the process of gathering and interpreting facts, diagnosing problems, and recommending improvements to a system. The professional responsible for this activity is known as a **system analyst**.

In a broader sense, systems analysis involves:

- identifying and understanding a system and its subsystems,
- examining interrelationships among components,
- modifying, merging, separating, or upgrading components to achieve overall system objectives.

The ultimate objective of systems analysis is **system improvement**—for example, changing outputs, redefining goals, improving efficiency, altering inputs, or creating an entirely new system.

In modern libraries, systems analysis is no longer confined to computer professionals alone. **Library professionals actively participate** in analysing and designing automated and networked library systems.

LIS examples (4–5):

- Analysis of manual circulation before automation
- Study of OPAC usability before redesign
- Evaluation of e-resource access workflow
- Review of acquisition delays in traditional systems
- Analysis of inter-library loan turnaround time

5. Major Systems Analysis Methods

There are three widely used systems analysis methodologies:

- **Systems Development Life Cycle (SDLC) Method**
- **Structured Analysis Development Method**
- **Systems Prototype Method**

Each method offers a different approach to understanding, designing, and improving systems.

6. Systems Development Life Cycle (SDLC) Method

The **SDLC method** is a step-by-step, structured approach to system development, based on engineering principles. It views a system as having a **life cycle**, similar to a living organism, consisting of clearly defined phases.

Key Phases of SDLC

Recognition of Need
This stage identifies the problem or opportunity. The analyst prepares a preliminary statement defining the scope and objectives.

LIS example:
Replacing manual bibliography compilation with a searchable bibliographic database.

Feasibility Study
A detailed study is conducted to assess:

- technical feasibility,
- economic feasibility (cost–benefit),
- operational feasibility,
- behavioural and organisational impact.

The outcome is a **formal proposal** approved by management.

LIS examples (4–5):

- Feasibility of RFID-based circulation
- Cost–benefit analysis of ILMS adoption
- Assessing staff readiness for automation
- Evaluating digitization projects
- Studying user acceptance of self-check kiosks

Analysis
A detailed examination of the existing system, including data collection on files, transactions, decision points, and workflows.
Common tools include:

- interviews,
- questionnaires,
- observations,
- data flow diagrams.

Design
Design specifies **how the system will work**, including:

- output design,
- input design,
- database design,
- program construction and testing,

- documentation.

Implementation
This phase includes:

- user training,
- file and data conversion,
- system testing,
- parallel running of old and new systems.

LIS example:
Running automated circulation alongside manual registers during transition.

Post-Implementation and Maintenance
Ongoing maintenance ensures reliable operation, error correction, and system enhancement.

Overview of SDLC Stages

Stage	Key Question	Outcome
Recognition of Need	What is the problem/opportunity?	Statement of scope and objectives
Feasibility Study	Is it worth solving?	Cost–benefit and feasibility report
Analysis	What must be done?	Logical system model
Design	How should it be done?	System specifications
Implementation	How is it installed?	Operational system
Maintenance	Is it working effectively?	Improved and stable system

7. Structured Analysis Development Method

Structured analysis is a technique that **organises unstructured information** collected during analysis into clear, logical models. It focuses on **what the system does**, not how it is physically implemented.

Its main tool is the **Data Flow Diagram (DFD)**, which graphically represents:

- data movement,
- data transformation,
- data storage.

Data Flow Diagrams (DFDs)

A **DFD** illustrates how data flows through a system and how it is processed.

DFD Symbols

- **Square**: source or destination of data
- **Arrow**: data flow
- **Circle (bubble)**: processing activity

- **Open rectangle**: data store

LIS examples (4–5):

- DFD for book issue and return
- DFD for bibliographic search
- DFD for acquisition workflow
- DFD for e-resource authentication
- DFD for inter-library loan requests

Guidelines for Constructing DFDs

- Identify sources and destinations
- Trace a typical transaction
- Recognise data stores
- Redraw diagrams iteratively
- Focus on logical accuracy rather than perfection

8. Systems Prototype Method

A **prototype** is a **working model** of an information system rather than a theoretical design. It uses real data and live situations.

Key characteristics:

- Users evaluate the system directly
- Design evolves through feedback
- Changes are expected and encouraged
- Acts as a pilot or test model

LIS examples (4–5):

- Prototype OPAC before full deployment
- Trial digital library interface
- Pilot institutional repository
- Test version of discovery service
- Experimental mobile library app

The prototype method is especially effective in libraries where **user feedback and service quality** are central to system success.

9. Systems Analyst as a Professional

Systems analysis is a **people–procedure–technology–intensive** activity. It relies on common sense, a structured framework, and a disciplined approach to problem solving. Because systems are embedded in organizations, the systems analyst must work across technical and human dimensions.

9.1 Role of a Systems Analyst

A systems analyst performs **multiple, overlapping roles** throughout the system life cycle.

Change Agent
Introduces and manages change while minimizing user resistance. Change is inherent in systems analysis; successful adoption depends on careful communication and phased transition.

Investigator and Monitor
Diagnoses why the current system underperforms and identifies corrective changes. As a monitor, tracks progress against **time, cost, and quality** benchmarks.

Architect
Translates user needs and abstract requirements into **detailed system designs** that developers can implement.

Psychologist
Understands user behavior, expectations, and concerns; interprets feedback; anticipates adoption barriers.

Salesperson
Persuades stakeholders of the value of the proposed system at every stage of the life cycle.

Motivator
Encourages users during training and early operation to build confidence and sustained use.

Politician
Balances competing interests, builds consensus, and secures stakeholder support through diplomacy.

LIS examples (4–5):

- Leading staff through migration from manual to automated circulation
- Investigating delays in cataloguing workflows and monitoring fixes
- Designing OPAC screens from faculty requirements
- Addressing staff anxiety during RFID rollout
- Negotiating feature priorities among departments

9.2 Systems Analysis Skills

Effective systems analysis requires **interpersonal** and **technical** skills in equal measure.

Interpersonal Skills

Communication
Ability to speak the users' language, mediate among groups, and work across organizational levels.

Understanding
Skill in problem identification, impact assessment, and alignment with organizational goals; sensitivity to people at work.

Teaching
Capacity to train users, explain system benefits, and provide ongoing support.

Selling
Promoting ideas and innovations; building buy-in for computer-based solutions.

LIS examples (4–5):

- Explaining ILMS benefits to non-technical staff
- Training users on discovery tools
- Mediating between IT staff and librarians
- Presenting automation proposals to management
- Supporting users during post-go-live issues

Technical Skills

Creativity
Modeling user ideas into feasible designs; developing candidate solutions.

Problem Solving
Decomposing problems, generating alternatives, and evaluating pros/cons.

Project Management
Scheduling, coordination, cost control, and delivery under constraints.

Dynamic Interface
Blending technical and non-technical considerations in functional design.

Foundational Computing Knowledge
Questioning attitude, analytical thinking, and understanding of computing basics.

LIS examples (4–5):

- Designing integrated acquisition–cataloguing workflows
- Evaluating open-source vs proprietary ILMS
- Managing timelines for digitization projects
- Balancing usability with security in access systems
- Configuring metadata standards for repositories

9.3 Library Professionals as Systems Analysts

The twenty-first century marks a **transformational phase** for libraries driven by information technology. Modern libraries rely on:

- automation of core functions,
- networking and resource sharing,
- bibliographic and digital database development,

- Internet and electronic resource access.

With large-scale IT adoption, **library professionals are increasingly expected to perform systems analysis roles**. In contexts where many libraries remain traditional, librarians play a critical role in **planning, analysing, and guiding automation and networking** initiatives.

Internationally, librarians have been classified as **systems analysts and database specialists** due to this shift, and roles such as **Library Systems Analyst** exist alongside traditional positions.

LIS examples (4–5):

- Librarians leading ILMS selection and customization
- Acting as product owners for digital library platforms
- Analysing usage data to redesign services
- Coordinating consortial e-resource systems
- Serving as liaisons between vendors and users

As computerization and networking expand, the role of **library professionals as systems analysts** will continue to grow in scope and importance.

10. Program Evaluation and Review Technique (PERT)

In **1957**, a new managerial planning and control technique called **Program Evaluation and Review Technique (PERT)** was developed by the **U.S. Navy Special Projects Office** for the **Polaris missile project** supporting nuclear submarine systems. PERT was designed to plan, schedule, and control **large, complex, and uncertain projects**.

PERT is fundamentally a **probabilistic network-based technique** that applies **simple statistical mathematics** to estimate project completion times and predict future performance.

Purpose of PERT

PERT was designed to provide:

- Management information on **actual and impending project problems**
- Continuous **status reporting** on progress, deadlines, and probabilities of achievement
- Identification of **most and least critical activities** in a project

PERT presents a **comprehensive picture of project activities**, their interdependencies, and time requirements. It helps managers focus attention on **critical activities** and reallocate resources efficiently.

A major strength of PERT is its ability to **predict future performance** through frequent reporting—unlike earlier methods that relied mainly on historical data.

LIS examples (4–5):

- Planning a library automation project
- Scheduling digitization of rare manuscripts

- Implementing an institutional repository
- Migration from one ILMS to another
- Setting up a new central library building

11. Time Estimation in PERT

PERT estimates activity duration using **three time assumptions**:

- **Optimistic time (a):** Minimum possible time assuming ideal conditions
- **Pessimistic time (b):** Maximum possible time assuming worst conditions
- **Most likely time (m):** Normal time most likely to occur

Using these, the **expected time (t)** and **standard deviation (σ)** are calculated:

- **Expected time (t)** = (a + 4m + b) / 6
- **Standard deviation (σ)** = (b − a) / 6

This probabilistic approach allows managers to **quantify uncertainty** and estimate the likelihood of meeting deadlines.

12. Major Features of PERT Analysis

The core feature of PERT is the **network diagram**, which visually depicts:

- Project activities
- Their logical sequence
- Dependencies and interrelationships

Activities and Paths

- **Activities** are tasks that consume time or resources
- A **path** is a sequence of activities from start to finish
- The **critical path** is the longest-duration path and determines project completion time

Any delay in a critical-path activity **delays the entire project**. To shorten project duration, managers must reduce time along the critical path.

Deterministic vs Probabilistic Estimates

- **Deterministic estimates:** High certainty
- **Probabilistic estimates:** Subject to variability (used in PERT)

PERT uses statistical techniques to calculate **variance and standard deviation** of paths, enabling probability-based project completion forecasts.

13. Stages of PERT

PERT is a **network model** where:

- **Activities** are represented by lines (arcs)
- **Milestones/events** are represented by nodes

Milestones are numbered sequentially (often in multiples of 10) to allow insertion of new activities later.

Steps in PERT Planning

- **Identify activities and milestones**
- **Determine activity sequence**
- **Construct network diagram** (AOA or AON)
- **Estimate time for each activity**
- **Determine the critical path**
- **Update the PERT chart periodically**

As the project progresses, estimated times are replaced with **actual times**. Resources can be shifted from **non-critical activities (with slack)** to **critical activities** to avoid delays.

LIS examples (4–5):

- Identifying stages of library digitization
- Sequencing cataloguing before circulation
- Estimating time for RFID implementation
- Finding critical path in database migration
- Updating schedules during network downtime

14. Activity Parameters in PERT

Each activity in a PERT network may include:

- Activity Name (AN)
- Expected Duration (ED)
- Earliest Start (ES)
- Earliest Finish (EF)
- Latest Start (LS)
- Latest Finish (LF)
- Slack (S)

Slack indicates how long an activity can be delayed **without affecting project completion**.
Activities on the **critical path have zero slack**.

15. Implementation of PERT

PERT implementation begins by:

- Listing all project tasks
- Identifying dependencies
- Estimating three time values (O, M, P)
- Computing expected time (TE)

Network diagrams can be drawn manually or using software. Two common formats are:

- **Activity-on-Arrow (AOA)**
- **Activity-on-Node (AON)** (more commonly used)

AON diagrams start with a **Start node**, end with a **Finish node**, and show dependencies clearly.

16. Advantages of Using PERT

- Clearly defines **dependencies** among activities
- Identifies the **critical path**
- Highlights **early start, late start, and slack**
- Improves resource allocation
- Supports **probability-based scheduling**
- Organizes large project data visually

17. Disadvantages of Using PERT

- Complex projects may have **hundreds of activities**
- Not well suited for **small projects**
- Network diagrams can become **large and unwieldy**
- Accuracy depends heavily on **quality of time estimates**
- Status tracking can be difficult without visual aids

PERT is a powerful tool for **planning, scheduling, and controlling complex projects under uncertainty**. In libraries, it is especially valuable for **automation, digitization, system migration, and infrastructure development projects**, where task interdependence and time uncertainty are high.

18. Concepts and Terminology

This section explains important **project management and systems analysis terms** commonly used in **PERT/CPM–based planning and control**.

18.1 ACI (Activity Critical Index)

Activity Critical Index (ACI) is mainly used in **risk analysis** to measure how critical an activity is within a project network.

- It is expressed as a **ratio between 0 and 1** or more commonly as a **percentage**.

- During simulations (for example, **Monte Carlo simulations**), an activity may or may not lie on the **critical path** in different iterations.
- ACI shows **how frequently an activity appears on the critical path** across all iterations.

Interpretation:

- High ACI → High likelihood of delaying the project
- Low ACI → Less impact on overall project duration

Example:
If an activity exists in 50% of the simulations and is critical in 50% of those cases, its ACI = **25%**.

18.2 ADM (Arrow Diagram Method)

Arrow Diagram Method (ADM) is a **network diagramming technique** where:

- **Activities are represented by arrows**
- **Events or milestones are represented by nodes (circles)**

ADM is also known as **Activity-on-Arrow (AOA)** method.

Key characteristics:

- Only **Finish-to-Start (FS)** relationships are shown
- An activity must finish before its successor begins
- The **length of the arrow** represents activity duration

Node characteristics:

- Represents a **specific event or achievement**
- Consumes **no time and no resources**
- All incoming activities must be completed before outgoing activities begin

Current status:
The use of ADM has declined due to the popularity of computer-based tools. The **Precedence Diagram Method (PDM)** or **Activity-on-Node (AON)** is now preferred.

18.3 CPM (Critical Path Method)

The **Critical Path Method (CPM)** is a project planning technique used when a project consists of multiple **interdependent activities**.

- Identifies the **longest sequence of dependent activities**
- Determines the **minimum project completion time**
- Activities on the critical path have **zero slack**

CPM is especially effective when activity durations are **deterministic** (known with certainty).

18.4 DSS (Decision Support Systems)

A **Decision Support System (DSS)** is a **computer-based information system** designed to support **managerial decision-making**, particularly for:

- **Unstructured** and
- **Semi-structured** problems

DSS supports **middle and top-level management** and combines data, analytical models, and user-friendly interfaces.

According to Sprague (1980), DSS characteristics include:

- Focus on **ill-structured managerial problems**
- Combination of **analytical models and data retrieval**
- Easy interaction for **non-computer users**
- High **flexibility and adaptability** to changing environments

DSS may be:

- Fully computerized
- Human-powered
- Hybrid (human + computer)

18.5 LOB (Line of Balance)

Line of Balance (LOB) is a **management control technique** used for **repetitive processes**, such as:

- Manufacturing
- Assembly-line production
- Large-scale repetitive projects

LOB measures and presents **time, cost, and accomplishment** against a planned schedule.

Functions of LOB:

- Compare actual progress with planned objectives
- Highlight deviations and their severity
- Provide early warning of problem areas
- Forecast future project performance

The **LOB chart** allows managers to see, at a glance, whether activities are **ahead, on schedule, or behind**.

18.6 MC (Monte Carlo) Method

The **Monte Carlo (MC) Method** is a class of computational algorithms based on **repeated random sampling** to obtain numerical results.

Primary uses:

- Optimization
- Numerical integration
- Probability distribution modeling

Applications:

- Risk analysis in project scheduling
- Cost and schedule overrun prediction
- Complex systems with high uncertainty

In **project management**, Monte Carlo simulation provides more realistic forecasts for:

- Project duration
- Cost overruns
- Schedule risks

Monte Carlo–based predictions are often **more accurate than intuition or deterministic methods**, especially in large and complex projects.

This terminology forms the **analytical foundation** for understanding **PERT, CPM, risk analysis, and decision-support techniques**, especially in **library automation, information systems, and large-scale institutional projects**.

Unit 6. Total Quality Management (TQM)

1. Origin and Evolution of the Concept of Quality

The origin of the **quality concept** and **quality management** for the production of goods can be traced back to the beginning of **industrial mass production**. A major milestone in this journey was **W. A. Shewhart's** work *Economic Control of Quality of Manufactured Products* published in **1931**, which laid the foundation for modern quality control.

2. Modern Understanding of Quality

Many people hold **confused notions of quality**, often equating it with **high cost**. In reality:

- A high-priced product may still be of inferior quality
- High-quality goods and services can often be delivered at a **lower cost**

The modern concept of quality defines it as **conformance to requirements**, where *requirements* are the tasks necessary to meet **customer needs**. Quality cannot be ensured merely by inspection; it must be **designed into the entire system**. The goal of quality improvement is **not to filter out defective products**, but to **eliminate defects at the source** by improving processes.

3. Definitions of Quality by Leading Thinkers

3.1 Michael Maccoby

According to **Michael Maccoby**, quality in the industrial age means **meeting or exceeding customer expectations** in terms of:

- Usability
- Durability
- Cost
- Timeliness of delivery

3.2 Philip Crosby

Philip Crosby, a TQM pioneer, defines quality as:

"Conformance to requirements"
Even though these requirements may not always fully represent customer expectations.

3.3 Peter Drucker

According to **Peter Drucker**:

"Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for."

3.4 Joseph M. Juran

Another quality guru, **Joseph M. Juran**, defines quality as:

"Fitness for use"
Here, *fitness* is determined entirely by the **customer**.

3.5 American Society for Quality (ASQ)

According to **American Society for Quality**:

"Quality denotes excellence in goods and services, especially to the degree they conform to requirements and satisfy customers."

4. Central Theme of Quality

Although definitions of quality vary, one common element unites them all: **the customer**.

Quality can be summarized as:

- Meeting or exceeding **customer expectations**
- Judged **only by the customer**, not by the producer
- Not negotiable, adjustable, or correctable later

Quality means **doing things right the first time, every time, and all the time**.

5. Clarification of Quality Concepts (Chakraborty)

Chakraborty explains quality improvement by contrasting misconceptions with reality:

5.1 What Quality Improvement Is *Not*

- Slogans, banners, or speeches
- A temporary program or "flavor of the month"
- Mere product inspection
- Someone else's responsibility
- A separate department or office
- Top-down instructions
- "Microwave" or quick-fix management

5.2 What Quality Improvement *Is*

- A belief in the **power of quality**
- Continuous improvement leading to better business results
- Integrated into daily management processes
- Part of business planning and objective setting
- A **long-term investment** requiring patience
- Continuous education and training
- Total involvement of management, employees, suppliers, and customers

6. Required Changes for Quality in the Indian Context

According to Chakraborty, the following changes are essential to make quality happen in India:

6.1 Customer-Centric Orientation

Every organization must recognize that it exists **to serve the customer**, clearly understanding and fulfilling customer needs.

6.2 Eliminating False Satisfaction

Organizations should stop convincing customers to accept less than they want. If demands cannot be met, honesty is better than compromise.

6.3 Embracing Demanding Customers

Demanding customers reflect confidence in the producer's capability. Retaining them requires **robust and flexible production systems**.

6.4 Proactive Accounting Systems

Accounting should influence thinking and decision-making, not merely react through financial ratios like ROI.

6.5 Waste Reduction at Source

Waste must be eliminated at its origin through **collective workforce involvement**, consciously developed via managerial action.

7. Need for Quality in the LIS Sector

Quality is no longer optional for **Library and Information Science (LIS)** institutions. It is a strategic necessity driven by competition, changing user behavior, and accountability.

7.1 Key Reasons for Emphasizing Quality in LIS

Aspect	Explanation
Organizational survival	Commitment to quality is central to institutional policy for survival in a competitive environment. It helps attract and retain users, staff, and funding.
Effective library use	Libraries face unprecedented competition from the internet, free e-books, mobile access, media platforms, seminars, and professional events. High-quality services are essential to draw users back.
Rising user expectations	Exposure to fast, user-friendly internet services has raised expectations from libraries regarding speed, accuracy, accessibility, and convenience.
Financial support	Visible commitment to quality strengthens confidence among management, funding agencies, and the public.
Revenue-based services	Quality assurance in paid services (internet access, photocopying, printing) ensures value for money and sustained user support.
Staff motivation	A quality-driven environment encourages innovation, continuous improvement, and professional growth among staff.
Professional image	Demonstration of quality enhances the librarian's professional credibility and conveys seriousness of purpose.

8. Total Quality Management (TQM): Introduction

Total Quality Management (TQM) is a management approach that originated in the **1950s** and gained momentum from the **1980s** onward. It emphasizes meeting customer needs through organization-wide commitment to quality, doing processes right the first time, and eliminating defects and waste.

TQM enables management and employees to participate jointly in **continuous improvement** of products and services, using a blend of quality tools and management practices.

Several global organizations have successfully implemented TQM, including **Ford Motor Company**, **Motorola**, and **Toyota Motor Company**.

8.1 Core Components of TQM

Component	Meaning
Total	Involvement of all levels and functions in the organization
Quality	Degree of excellence or conformance to agreed requirements
Management	Planning, directing, controlling, and improving processes

TQM applies **quantitative techniques** and **human resource development** to improve all processes, aiming to deliver services that **exceed customer expectations**.

9. TQM: What, How, and Principles

TQM is often confused with quality assurance, but it is broader and cultural in nature. A widely accepted definition for service organizations (Cook, 1992) states:

Total Quality Management (TQM) is an approach adopted by organizations to improve performance on a systematic and continuous basis through the involvement of all employees in satisfying the total requirements of every customer—internal and external—by developing error-free processes.

9.1 Core Concepts Embedded in TQM

Concept	LIS Context
Internal and external customers	Colleagues are internal customers; library users are external customers. Both must be satisfied.
Error-free processes	Focus on preventing delays, mistakes, rework, and user complaints by improving workflows.
Continuous improvement	TQM is an ongoing journey that transforms organizational culture and attitudes.

TQM shifts the mindset from **“good enough”** to **“right the first time”**, emphasizing prevention over correction.

10. TQM Philosophy Explained (Chakraborty, 1996)

TQM rests on three fundamental reform ideas:

Reform Idea	Explanation
Customer-driven focus	Shift from self-centered operations to user-centered services
Process orientation	Improve processes rather than obsessing over end results
Employee empowerment	Use employees’ intellect and creativity, not just manual effort

The guiding principle is clear:
Organizations are not in the business of finding customers for products, but finding products and services for customers.

11. Practical Guidance for Implementing TQM in Libraries

Based on TQM implementation experience in U.S. libraries, **Stuart and Drake (1993)** offered the following guidance:

Area	Recommended Practice
Staff involvement	Involve every staff member in quality initiatives
Customer identification	Clearly identify internal and external customers
User satisfaction	Continuously measure and improve satisfaction
Feedback mechanisms	Increase interaction and feedback channels
Value addition	Develop and deliver value-added services
Innovation	Encourage efficiency and innovative thinking
Communication	Promote open and transparent communication
Staff development	Invest in training, education, and professional growth

12. Principles of Total Quality Management (TQM)

Total Quality Management is an **organization-wide philosophy** centered on continuously improving:

- the **quality of products and services**, and
- the **quality of processes**,

so that **customer expectations are met and exceeded**. TQM involves **everyone**—top management, employees, suppliers, and even customers.

12.1 Five Core Principles of TQM

Principle	Explanation in LIS Context
Produce quality work the first time	Quality is built into library processes (acquisition, cataloguing, circulation, digital services) so errors are prevented rather than corrected later.
Focus on the customer	Library services are designed around user needs, expectations, convenience, accessibility, and satisfaction.
Strategic approach to improvement	Quality goals are aligned with institutional strategy, long-term planning, and performance indicators.
Continuous improvement	Library workflows are constantly reviewed to improve efficiency, accuracy, and responsiveness.
Mutual respect and teamwork	A culture of collaboration where all staff contribute to quality outcomes.

Producing quality work the first time means embedding quality into processes themselves. Staff are empowered to make improvements and are given continuous training.

Customer focus includes not only the service itself, but also:

- ease of access,

- accuracy of information,
- timeliness, and
- communication with users.

Continuous improvement implies ongoing analysis of how work is done and striving for excellence rather than settling for adequacy.

Mutual respect and teamwork foster a shared organizational culture where quality is everyone's responsibility.

13. TQM vs. Traditional Management

Aspect	Traditional Management	Total Quality Management
Focus	Results and outputs	Processes and customers
Quality responsibility	Inspection department	Everyone in the organization
Problem handling	Correct errors after occurrence	Prevent errors at source
Decision-making	Top-down	Participative and team-based
Improvement	Occasional	Continuous
Training	Limited	Continuous and systematic
Customer role	External only	Internal and external

14. History of Total Quality Management (TQM)

The evolution of TQM is closely linked with industrial development, behavioral science, and statistical quality control.

14.1 Early Foundations

- **1920s**
    - Scientific management principles emphasized efficiency.
    - Separation of planning and execution reduced worker participation.
    - Elton Mayo's **Hawthorne Experiments (1927–1932)** demonstrated that worker participation improves productivity.
- **1930s**
    - Walter Shewhart developed **statistical quality control** and control charts.
- **1940s**
    - World War II accelerated **standardization**, **statistical control**, and **best manufacturing practices**.

14.2 Japanese Quality Movement

- **1950s**

- W. Edwards Deming trained Japanese managers in statistical quality control and continuous improvement.
- Joseph M. Juran emphasized management responsibility, planning, and goal setting for quality.
- Armand Feigenbaum published *Total Quality Control* (1961), a precursor to TQM.
- Philip B. Crosby promoted the **Zero Defects** concept.

- **1968**
  - Japan formally adopted **company-wide quality control**.
  - Kaoru Ishikawa contributed tools and philosophy that made Japan a global quality leader.

14.3 Human Motivation and Quality

- **1954**
  - Abraham Maslow proposed the **Hierarchy of Needs**, explaining how motivation affects productivity.

Maslow's Hierarchy of Needs (Work Context)

Level	Need
1	Physiological (food, rest, shelter)
2	Safety (economic and physical security)
3	Belonging (social acceptance)
4	Esteem (recognition and respect)
5	Self-actualization (achieving one's best potential)

15. Modern TQM Perspective

Today, TQM principles are reflected in:

- **ISO 9000 series** quality standards,
- **Deming Prize**, and
- **Malcolm Baldrige National Quality Award**.

These frameworks specify systematic approaches to quality, continuous improvement, and customer satisfaction across sectors, including **libraries and information centers**.

16. Process of Total Quality Management (TQM): Stages of TQM

The implementation of **Total Quality Management (TQM)** follows a systematic and continuous improvement cycle known as the **PDCA Cycle—Plan, Do, Check, Act**. This cycle ensures that quality improvement is data-driven, user-focused, and sustainable.

16.1 Overview of the PDCA Cycle

Stage	Purpose	Key Outcome
Plan	Identify problems and plan improvements	Clearly defined problem and solutions
Do	Implement solutions on a trial basis	Tested process changes

Check	Evaluate results using data	Evidence of improvement or gaps
Act	Standardize and institutionalize changes	Sustained quality improvement

16.2 Plan

The **planning stage** begins with recognizing that a problem exists. Problems may be identified through:

- User complaints and unsolicited feedback
- Questionnaire surveys
- Library committee meetings
- Staff observations during routine operations

When multiple problems are identified, **prioritization** is essential. Priority should be given to:

- Problems with the **highest impact on users**, or
- Problems involving the **highest cost** to the library.

Data Collection at Micro-Level (LIS Examples)

In the context of implementing TQM in the **Circulation Section**, data collection may include:

- Number of borrowers served per hour
- List and sequence of operations at the circulation desk
- Time required for each operation
- Average time spent by a reader at the circulation counter
- Identification of value-adding operations for users
- Identification of avoidable or redundant operations
- Performance measurement yardsticks
- Personal efficiency of circulation staff
- Impact of physical environment (seating, lighting, counters) on service quality

Problem Analysis Tools

Brainstorming

- Encourages free flow of ideas without criticism
- Duplicate or irrelevant ideas are eliminated after discussion

Fishbone (Cause-and-Effect) Diagram

- Helps identify root causes of problems
- Causes are analyzed under major categories such as:
    - People (training, motivation)

- Process (workflow design)
- Machines/Environment (technology, furniture)
- Materials (forms, documents, tools)

After analysis, causes with the **highest impact** on performance are shortlisted.

Root Cause Identification

The team repeatedly asks:

- **Why did this problem occur?**
- **How did it happen?**

This questioning continues until the **root cause** is clearly identified.

16.3 Do

Once a possible solution is identified, **trial implementation** begins.

Key guidelines:

- Introduce **only one variable at a time** to accurately measure its impact
- Monitor the trial closely and record results
- Collect sufficient data to validate findings (around **100 data items** are generally considered statistically reliable)

If improvement is observed:

- Incorporate the change into a revised process
- Conduct further trials for additional improvements

If no improvement is observed:

- Reject the change and test alternative variables

16.4 Check

At this stage, the results of trial runs are **evaluated using statistical techniques**.

- Compare pre- and post-change performance
- Identify positive, neutral, or negative impacts
- Investigate unexpected results

If results are negative:

- Revisit the problem definition and trial design

If results are positive:

- Confirm that improvements do not negatively affect **related processes**

16.5 Act: Standardization and Control

Once successful improvements are confirmed, the new process must be **standardized**.

Key activities include:

- Preparing new process flowcharts
- Updating written procedures and manuals
- Ensuring documentation is clear, explicit, and transparent
- Providing systematic staff training on revised processes

Standardization ensures:

- Consistency in service delivery
- Sustained quality improvement
- Better control over library operations

16.6 Conclusions and Future Plans

Completion of one TQM project does not mark the end of quality improvement.

Important considerations:

- Continuous monitoring of service performance is essential
- User needs evolve over time (e.g., differences between 1990s and 2010s users)
- Systems must be in place to regularly assess:
    - User satisfaction
    - Changing expectations
    - Performance benchmarks

TQM is therefore a **continuous, dynamic, and user-centered process**, not a one-time initiative.

17. TQM Tools

Besides the **PDCA Cycle** and **Fishbone (Cause–Effect) Diagram**, the following tools are widely used in **Total Quality Management (TQM)**, especially in **Library and Information Science (LIS)** contexts.

17.1 Common TQM Tools and LIS Examples

TQM Tool	Purpose	LIS Example
Pie Charts	Show proportion or distribution	Percentage allocation of book funds by subject
Bar Graphs	Compare values across categories or time	Growth in book loans over the last 5 years
Histogram	Group data into ranges	Number of users borrowing 50–60 books in a semester

Run Charts	Track performance over time	Month-wise circulation statistics for 1 year
Pareto Charts	Identify major causes of problems (80/20 rule)	Main reasons for delay in releasing new books
Force Field Analysis	Analyze forces for/against a change	Decision to extend library hours by 2 hours
Focus Groups	Collect qualitative user feedback	Feedback on increasing photocopy charges
Brainstorming	Generate creative solutions	Ideas to reduce book pilferage
Tree Diagrams	Break goals into sub-goals	Goals and sub-goals for library marketing
Flowcharts / Models	Visualize processes	Book acquisition and processing workflow
Scatter Diagrams	Study relationship between variables	Relationship between photocopy charges and usage
Relationship Diagrams	Analyze complex interrelationships	Reasons for decline in usage across library branches

18. Benefits of TQM for Libraries

TQM promotes a **customer-first philosophy**, transforming how library services are planned and delivered.

18.1 Benefits to LIS

Area	Benefit
Users	Improved customer satisfaction and reduced complaints
Staff	Higher motivation, empowerment, and pride in work
Operations	Elimination of waste in materials and staff time
Finance	Improved revenue from priced services
Resources	Better utilization of collections, space, equipment, and software
Work Culture	Tension-free environment and improved relationships
Innovation	Continuous improvement and service innovation

19. Areas in LIS Where TQM is Applicable

TQM is most effective in **routine, repetitive, and user-facing activities**.

19.1 Priority Areas for TQM in LIS

Functional Area	Examples
User Services	Issue desk service, reference service
Technical Processing	Book processing, cataloguing, data entry
Collection Management	Book selection, procurement, stock verification
Access & Use	Shelving, security gate management
Communication	Email, telephonic, and face-to-face interactions
Monitoring	User studies, usage statistics
Internal Services	Duty rosters, leave management
Information Services	Bibliography compilation, SDI, CAS

20. Barriers to TQM in Libraries

Despite its advantages, several constraints hinder effective TQM adoption.

20.1 Major Barriers

Barrier	Explanation
Lack of Understanding	Misconception that quality is expensive
Low Expectations	Staff complacency and absence of performance drive
Weak Management Commitment	Lack of leadership support and training
Limited Staff Involvement	Junior staff excluded from quality initiatives
Inadequate Resources	Insufficient budget for training and tools
Poor User Focus	Absence of feedback mechanisms
Lack of Training	Insufficient skills in statistics, tools, and software

21. TQM in Different Types of Libraries

21.1 Priority Areas by Library Type

Library Type	TQM Priority Areas
Public Libraries	Book selection, circulation, reference service, shelving
Academic Libraries	Circulation, stock management, user orientation, security
Special Libraries	Literature search, document delivery, SDI, CAS

22. TQM vs Six Sigma

Although both aim at quality improvement, their approaches differ significantly.

22.1 Comparison of TQM and Six Sigma

Aspect	TQM	Six Sigma
Nature	Cultural and collaborative	Data-driven and statistical
Focus	Continuous incremental improvement	Defect reduction and variation control
Measurement	Customer expectations	Defects (≤ 3.4 per million)
Methodology	PDCA (Plan–Do–Check–Act)	DMAIC (Define–Measure–Analyze–Improve–Control)
Staffing	Part-time teams	Certified professionals (Black/Green Belts)
Suitability	Service organizations (libraries)	Manufacturing and process industries

Conclusion:
For libraries as socio-cultural service institutions, **TQM is more relevant** than Six Sigma.

23. Summary

Quality is **conformance to requirements** and is ultimately judged by the **customer**.
TQM is a **systematic, continuous, and organization-wide approach** to improving services by involving everyone and preventing errors at the source.

The **PDCA cycle** ensures continuous improvement, while TQM tools help identify problems, analyze causes, and implement sustainable solutions.
Successful TQM implementation in libraries requires:

- Strong management commitment
- Staff involvement and training
- Continuous user feedback
- A pervasive culture of quality

Unit. 7 Library House Keeping Operations

1. Different Sections of a Library & Information Centre and Their Functions

A **Library & Information Centre (LIC)** is organized into several functional sections. Each section performs specialized activities, but all work together to achieve the common goal of **providing the right information to the right user at the right time**.

1.1 Acquisition Section

Main Function: Selection and procurement of library materials.

Key Functions:

- Selection of books, journals, e-resources, and other materials
- Ordering and purchasing documents
- Receiving and verifying supplied items
- Maintaining accession records
- Handling gifts, exchanges, and donations

LIS Examples:

- Purchase of new Sanskrit manuscripts
- Subscription to e-journals like JSTOR or Project Muse
- Accessioning donated reference books
- Managing book vendor records

1.2 Technical Processing Section

Main Function: Preparing documents for use.

Key Functions:

- Classification of documents (DDC, UDC, CC, etc.)
- Cataloguing (AACR-2, RDA, MARC 21)
- Subject indexing
- Labeling, stamping, and barcoding

LIS Examples:

- Assigning DDC number to a history book
- Creating MARC records in Koha
- Subject heading allocation using LCSH
- Barcode generation for circulation

1.3 Circulation Section

Main Function: Lending and returning of library materials.

Key Functions:

- Issue and return of books
- Renewal and reservation of documents
- Maintaining borrower records
- Overdue control and fine collection
- Membership registration

LIS Examples:

- Issuing textbooks to UG students
- Online renewal through OPAC
- Reservation of reference books
- Fine calculation for overdue items

1.4 Reference Section

Main Function: Assisting users in finding information.

Key Functions:

- Answering ready reference queries
- Providing long-range reference service
- User guidance and information assistance
- Referral service

LIS Examples:

- Answering factual queries (dates, definitions)
- Helping researchers find primary sources
- Assisting with citation styles
- Guiding users to subject databases

1.5 Periodicals Section

Main Function: Management of serial publications.

Key Functions:

- Subscription and renewal of journals and magazines
- Check-in of current issues
- Display and storage of periodicals

- Binding of back volumes

LIS Examples:

- Managing monthly research journals
- Maintaining newspaper files
- Binding annual volumes of journals
- Access management of e-journals

1.6 Stack / Shelving Section

Main Function: Proper arrangement and storage of documents.

Key Functions:

- Shelving books according to classification
- Shelf rectification and shelf reading
- Maintenance of physical order
- Locating missing books

LIS Examples:

- Arranging books class-wise
- Shelf reading to detect misplaced books
- Stack maintenance for reference section
- Locating lost or missing items

1.7 Digital Library / E-Resources Section

Main Function: Management of electronic information resources.

Key Functions:

- Managing e-books, e-journals, databases
- Institutional repository maintenance
- Digitization of documents
- Access control and licensing

LIS Examples:

- Managing Shodhganga access
- Digitization of rare manuscripts
- Maintaining institutional repository (DSpace)
- Providing remote access to databases

1.8 Reprography Section

Main Function: Document reproduction services.

Key Functions:

- Photocopying and scanning services
- Printing facilities
- Copyright compliance

LIS Examples:

- Providing photocopies of journal articles
- Scanning chapters for research use
- Printing dissertations and reports

1.9 User Education / Information Literacy Section

Main Function: Educating users to use library resources effectively.

Key Functions:

- Orientation programs
- Information literacy training
- Database search training
- OPAC usage guidance

LIS Examples:

- Library orientation for freshers
- Training on online databases
- Workshops on plagiarism tools
- OPAC and discovery tool training

1.10 Administration Section

Main Function: Overall management and coordination.

Key Functions:

- Policy formulation
- Staff management and duty rosters
- Budget preparation and control
- Report writing and correspondence

LIS Examples:

- Preparation of annual library budget
- Staff appraisal and duty allocation
- Policy drafting for collection development
- Submission of annual library reports

1.11 Maintenance and Security Section

Main Function: Ensuring safety and upkeep of library premises.

Key Functions:

- Building and furniture maintenance
- Security and theft control
- Environmental control (lighting, ventilation)
- Disaster management

LIS Examples:

- RFID and security gate management
- Fire safety arrangements
- Maintenance of reading halls
- CCTV monitoring

1.12 Collection Development: Concept and Emerging Importance (Indian Context)

Concentration on **collection development** is a relatively recent phenomenon in the Indian context, though it has a longer tradition in Western countries. Even today, many university and public libraries in India do not approach collection development strategically in terms of **fund allocation, long-term planning, or formally written policies**.

In contrast, **special libraries** have made relatively greater progress because they operate with limited funds that must be optimally utilized by serious researchers. The growing **financial constraints** faced by libraries have compelled authorities to rethink budget allocation and utilization strategies. While the **budget for collection building is shrinking**, user demand for information is continuously increasing.

Unplanned or haphazard acquisition practices often disrupt mid-term budget plans, creating an urgent need for **strategic planning in collection building**. As a result, the preparation of **formal written collection development policy documents** has become inevitable and increasingly accepted among policymakers and library authorities.

1.13 Concept of Collection Development and Collection Management

A review of literature provides clarity on how practitioners understand collection development and management:

- **Collection management** is the systematic, efficient, and economical stewardship of library resources.

- The primary goal is to build collections that meet user needs **within fiscal and human resource limitations**.
- Each segment of the collection must be developed according to its **relative importance to the mission of the library** and the needs of users.

Collection management is a broader process that includes:

- Information gathering
- Communication and coordination
- Policy formulation
- Evaluation and planning

Collection development is a subset of collection management and focuses mainly on **decisions related to acquisition**, while also addressing selection and deselection of materials, planning for continuing acquisitions, and evaluating how well collections serve user needs.

1.14 Budget Constraints and Policy-Based Collection Decisions

By the **1970s**, library budgets across all types of libraries began to stagnate or decline. Libraries struggled to cope with:

- Rapidly increasing publication costs
- Exponential growth in published literature

As a result:

- The idea of comprehensive and self-sufficient collections became unrealistic
- Libraries sought responsible decision-making frameworks for managing limited resources
- Downsizing serials collections and cooperative resource sharing gained importance

This period witnessed the growing adoption of **collection development policy statements** to guide librarians in managing constrained financial resources amid competing demands.

1.15 Library Collections in Special Libraries

A **library collection** refers to all documents available in a library, considered in terms of **form, quality, and quantity**. The identity and reputation of a library are closely linked to its collection, which also acts as a primary attraction for users.

Earlier, physical documents dominated library collections, compelling scholars—particularly from Asia and India—to migrate to European countries for advanced research. Today, this scenario has changed significantly due to the rise of **digital resources**.

In **special libraries**, digital resources are often the **primary or exclusive source of information**. Researchers rely heavily on online resources because of:

- Immediate availability
- Absence of time lag

- Continuous access to updated information

1.16 Library Collection Development: Scope and Significance

The **library collection** is the soul of any library, and both its **quality and quantity** are critical. Collection management and collection development are often used interchangeably and represent the core functions of libraries.

A library without a collection ceases to exist as an information institution. While a large collection enhances the value and reputation of a library, collection growth is a **gradual and sustained process**, not an overnight achievement.

Some libraries grow gradually to support their user communities, while older institutions increasingly shift toward **digital collections** to meet evolving user expectations.

1.17 Collection Development Policies and Procedures

1.17.1 Definitions

Collection development policies are relatively new but are rapidly becoming **mandatory** in modern libraries. A **collection development policy** is an official document that outlines:

- Principles of selection
- Acquisition priorities
- Retention and deselection criteria
- Access strategies

Historically, formal policy documents are difficult to trace even in ancient libraries such as Alexandria or Nalanda. In many countries, such policies are either recent or still absent. Government initiatives in this area have also been limited.

Professional bodies, particularly the **American Library Association (ALA)**, have played a significant role in promoting written policies. Internationally, **IFLA** has developed guidelines, though implementation remains uneven. In India, individual institutions have increasingly begun drafting and periodically amending their own policies.

1.18 Purpose and Role of Collection Development Policy

A collection development policy:

- Reflects the **mission of the library**
- Demonstrates commitment to **intellectual freedom**
- Guides staff in selection and retention decisions
- Informs users about the principles governing resource selection

Since libraries serve diverse populations with varied interests but operate under limited resources, policies help balance competing demands. Libraries also collaborate through **consortia and cooperative arrangements** to expand access beyond their individual capacities.

1.19 Characteristics of a Collection Development Policy

A collection development policy:

- Is an **official and authoritative document**
- May be implemented individually or institutionally
- Can be mandated by a parent body or government authority
- Is **dynamic**, not static, and open to amendments
- Requires strict adherence to preserve its relevance
- Must be flexible to accommodate budgetary and subscription changes over time

1.20 Need for a Collection Development Policy

The need for a formal collection development policy has become critical due to:

- Stagnant or declining library budgets
- Rising costs of information resources
- Increasing dependence on expensive digital resources
- Shifting user preferences from print to electronic formats

Libraries are often compelled to **select, retain, or cancel resources**, decisions that can impact user communities differently. To avoid arbitrary or biased decision-making, a **written policy** provides an objective and transparent framework.

Such a policy ensures:

- Fair treatment of all user groups
- Balanced resource allocation
- Consistency in decision-making
- Strategic and sustainable collection growth

By addressing these challenges, collection development policies enable libraries to function effectively despite financial and technological constraints.

1.21 Content of the Collection Development Policy Document

1.21.1 Contents

A collection development policy document provides a structured framework for guiding all activities related to building, managing, and sustaining library collections. It defines boundaries, priorities, and procedures so that collection-related decisions remain consistent, transparent, and aligned with the mission of the parent organization.

1.22 Why a Written Collection Development Policy?

The primary task of any library is to **collect, select, process, and provide access to relevant information resources**. With rapid technological developments, libraries are now expected to make information available to users almost immediately after its creation. This expectation has significantly strengthened the role of collection development policies.

A written policy acts as a **formal framework** within which library staff operate. It goes far beyond being a mere selection tool and performs several critical functions:

- Encourages staff to periodically review and realign activities with the **short-term and long-term objectives** of the parent organization
- Provides guidance in **budget planning and allocation**
- Acts as a **communication tool** within the library and with external stakeholders
- Supports **cooperative and collaborative collection development**
- Assists in overall collection management, including **gifts, weeding, preservation, and deselection**

The major reasons for having a written collection development policy can be grouped under four broad headings.

1.23 Selection

A written collection development policy:

- Guides library staff in **selection and deselection** of materials
- Reduces **personal bias** and subjective decision-making
- Ensures **consistency and continuity** in collection building
- Helps identify and preserve **locally significant or specialized literature** that may not come from well-known publishers
- Covers the entire lifecycle of resources, including acquisition, processing, retention, preservation, and weeding

The policy clarifies different **levels of collections** such as:

- General collections
- Local or institutional collections
- Mainstream or core collections

Its evaluative nature enables informed decisions regarding subscription, continuation, or cancellation of resources. For newly recruited staff, the policy also serves as a **training and reference document**, especially when experienced staff are unavailable.

1.24 Planning

Planning is a crucial aspect of library administration, particularly in collection management. The collection development policy:

- Facilitates **future planning** in times of shrinking budgets

- Helps in **prioritizing resource allocation**
- Provides a rational basis for protecting and utilizing library funds
- Prevents confusion and ad hoc decision-making

Clear aims and objectives outlined in the policy help streamline activities related to:

- Acquisition
- Cataloguing
- Preservation
- Follow-up and evaluation

This coherence ensures that all collection-related activities align with the overall goals of the library.

1.25 Public Relations

A collection development policy is a **formal institutional document** that guides interactions with various stakeholders, including:

- Library users
- Administrators
- Sponsors
- Funding agencies
- Donors

The policy ensures that all interactions are conducted in an **official and professional manner**, minimizing the influence of personal expectations or favoritism. For example:

- Donors cannot demand preferential treatment
- Unwanted gifts or sectarian materials can be declined based on policy provisions

Such clarity helps avoid misunderstandings, criticism, and conflicts, thereby strengthening the **public relations function** of the library.

1.26 The Wider Context

Beyond routine operations, the policy plays an important role in the **broader cooperative environment**. Libraries may:

- Collaborate with other libraries
- Join consortia
- Participate in regional, national, or international resource-sharing initiatives

In the Indian context, cooperation among libraries—especially in metropolitan areas—can significantly enhance user services. The policy document provides the **rules and guidelines** for such collaborations, ensuring systematic and mutually beneficial partnerships.

1.27 Elements of a Collection Development Policy

Although collection development policies vary across institutions, certain elements are commonly present due to shared objectives and purposes.

1.28 Introduction

The introductory section of a collection development policy generally includes:

- Mission statement of the library
- Objectives and purpose of the policy
- Intended audience of the policy
- Description of the user community
- Types of programmes supported by the collection
- Overview of print volumes, periodicals, electronic resources, and language coverage
- Budgetary provisions and funding sources
- Agreements, memberships, and consortia participation

This section establishes the **context and scope** of the policy.

1.29 General Statements

General statements in the policy define:

- Types and formats of resources collected
- Sources of funding
- Policies regarding gifts and donations
- Maintenance procedures including weeding, discarding, and archiving
- Guidelines for handling user complaints
- Subject-wise limitations and delimitations

These statements ensure uniformity and clarity across all collection-related operations.

1.30 Narrative Statements

Narrative statements reflect the **unique identity** of the library and the community it serves. The language, tone, and prescriptions used in the policy should be institution-specific.

Key aspects covered include:

- Special subject or format collections requiring unique guidelines
- Scope of coverage in terms of language, geography, chronology, and scholarly depth
- Inclusion and exclusion criteria
- Organization of subjects using a **standard classification scheme**

- Treatment of interdisciplinary and uncategorized materials
- Emphasis on resources of **local or regional importance**

1.31 Subject Profiles

Subject profiles clearly explain:

- Why certain subjects are emphasized or deprioritized
- How subject priorities align with the mission and objectives of the parent institution

For example:

- In a medical college library, medical and health sciences resources receive the highest priority
- Leisure reading materials such as fiction may be included but assigned **lower acquisition priority**

Subject profiling ensures rational, mission-driven development of the library collection.

1.32 Collection Evaluation Methods

Collection evaluation methods form one of the **most critical components** of a collection development policy. Library staff must exercise caution while acquiring materials, especially in situations where selection is largely dependent on recommendations from teachers, researchers, or subject experts.

In routine cases, recommended titles may appear adequate. However, certain important documents may be **overlooked** due to factors such as:

- High cost of volumes
- Physical durability, layout, and format
- Long-term relevance and longevity
- Presence of potentially objectionable or sensitive content from religious, cultural, or national perspectives

Therefore, systematic evaluation methods are essential to ensure that resources added to the collection are **appropriate, useful, and cost-effective**.

1.33 Quantitative Measures

Quantitative measures involve the use of **numerical and statistical data** to assess the collection. These measures focus on aspects such as:

- Size of the collection
- Age of materials
- Usage statistics
- Cost of resources
- Number of users benefiting from the collection

Libraries should maintain quantitative records related to:

- Number of items acquired
- Frequency of use
- Circulation statistics
- Cost per use

Such data help determine whether the **investment made is justified** and support decisions regarding expansion, reduction, or reallocation of funds to high-demand subject areas.

Basic statistical techniques recommended in the policy include:

- Mean
- Median
- Mode

These tools assist in analyzing trends and patterns in collection usage and effectiveness.

1.34 Qualitative Measures

In contrast to quantitative measures, **qualitative evaluation** is more complex and subjective but equally vital. It assesses:

- Intellectual quality of resources
- Relevance to user needs
- Scholarly value
- Contribution to research and learning

Qualitative judgment may involve:

- Evaluation by subject experts outside the library
- Peer comparison with similar collections in other libraries
- Expert reviews and professional recommendations

For example:

- Subscription to a literary journal may be evaluated by experts in literature
- Retention or cancellation of a journal may be decided by comparing holdings with peer institutions

Such qualitative assessments ensure that the collection maintains **academic integrity and relevance**.

1.35 Collection Depth Indicators

Assessing whether a collection is **balanced, adequate, and fit for purpose**, both quantitatively and qualitatively, is a challenging responsibility—particularly for acquisition and collection development librarians.

Key considerations include:

- Required number of resources in a subject area

- Timeliness of acquisition
- Alignment with the goals and objectives of the library
- Depth of coverage appropriate to the user community

The acquisition department must ensure that the collection supports teaching, research, and information needs effectively within defined constraints.

1.36 Policy Implementation and Revision Timetables

Once finalized, the collection development policy must be **implemented within a defined time frame**. Typically:

- Implementation begins at the start of an academic or financial year
- In the Indian context, implementation often aligns with **1 July**, the beginning of the academic session

However, flexibility should be maintained, and rigid timelines should be avoided when circumstances demand adjustment.

All revisions and amendments must be clearly documented with:

- Relevant clauses and sub-clauses
- Dates of revision
- Authorizing signatures

1.37 Control Mechanism

A control mechanism is essential to:

- Monitor whether the policy is being implemented as prescribed
- Assess compliance across departments
- Evaluate future implications of policy decisions

Regular checks and reviews ensure that the policy remains an **active and effective management tool**, rather than a static document.

1.38 Revision of the Policy

Revision is a **core principle** of a sound collection development policy. The document must be dynamic and responsive to change.

Key aspects of revision include:

- Amendments approved through hierarchical procedures
- Drafting revisions separately or updating them directly in the collection management database
- Formal approval and authentication by authorized signatories

Revisions may be necessitated by:

- Budget reallocation or unexpected funding

- Changes in staffing levels
- Introduction of new subject areas or technologies
- Organizational restructuring

Once approved, revisions become an integral part of the policy and guide future collection development decisions.

1.39 Technical Processing Section

The **Technical Processing Section** plays a key role in carrying out the core functions of any library. The journey of every document—from acquisition to reaching the reader—passes through this section. It acts as a **bridge between acquisition and circulation**, ensuring that materials are properly prepared for effective use.

This section is responsible for all **technical activities** carried out by professional and technical staff. The major functions include:

- Classification
- Cataloguing
- Physical processing
- Shelving
- Filing and maintenance of library materials

Through these activities, the technical processing section ensures that documents are systematically organized, accessible, and retrievable.

1.40 Need for Technical Processing

Library materials undergo technical processing to ensure that they can be **located, used, and returned** efficiently. The need for technical processing has arisen due to several important factors:

- Tremendous growth of information, resulting in the production of diverse library materials
- Necessity to categorize the ever-expanding universe of knowledge
- Requirement to arrange information while maintaining subject specialization
- Systematic arrangement of documents to facilitate easy storage and retrieval
- Fulfilment of users' information needs

In addition to these factors, several **technical tools** have been developed to support processing and management of collections, such as:

- Classification schemes
- Thesauri
- Cataloguing codes
- Subject heading lists

These vocabulary control devices support the creation of **modern information services and products**.

1.41 Steps in Technical Processing

The steps involved in technical processing vary across libraries depending on:

- Type of library (academic, public, special)
- Nature of materials (books, journals, digital resources, AV materials)

Even within the same library, different materials may follow different workflows. However, the **basic steps** generally include:

a) Classification
b) Cataloguing
c) Preparation of shelf list
d) Labelling of documents

In this module, emphasis is placed on **classification and cataloguing**, as these are the two most critical stages of technical processing.

1.42 Library Classification

The organization of library collections for easy retrieval can be traced back to **university libraries of the late Middle Ages**. Monastery libraries of that period were relatively small and did not require formal classification systems.

At the beginning of the **16th century**, librarians began devising classification schemes to arrange books systematically. With the rapid growth of libraries during the **19th century**, the need for a scientific organization of knowledge became more pronounced.

One of the most notable early efforts to classify the universe of knowledge was made by **Thomas Jefferson**, the third President of the United States. He adapted **Francis Bacon's outline of knowledge** to organize his personal library and proposed similar arrangements for the libraries of:

- University of Virginia
- College of William and Mary

1.43 Development of Early Classification Systems

The Baconian system divided knowledge into three main faculties:

- History
- Philosophy
- Poetry

Several librarians adopted or modified this approach, including:

- T. M. Harris, Librarian at Harvard
- Edward William Johnson, College of South Carolina

- William Torrey Harris, who later inverted the Baconian system to create an independent American classification

These developments laid the groundwork for more systematic and widely accepted classification schemes.

1.44 Dewey Decimal Classification (DDC)

In **1876**, **Melvil Dewey** introduced the **Dewey Decimal Classification (DDC)**, largely influenced by W. T. Harris's system. DDC is:

- The **oldest** modern classification system
- The **most widely used** classification system in the world

The first edition was published anonymously under the title:
A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library.

Subsequent developments include:

- Second edition published under Dewey's name
- Continuous revisions leading to the **22nd edition (2004)**
- Online version **WebDewey**, maintained by OCLC, which includes regular updates

1.45 Purpose and Importance of Library Classification

Library materials are classified for several essential reasons:

- To assign each item a **definite place** in the collection
- To help users **locate materials quickly**
- To enable **browsing** by grouping similar subjects together
- To facilitate **efficient reshelving** and availability for future users

Since the primary function of a library is to provide access to reading and information materials, **subject-based classification** is fundamental to library services.

1.46 Definition of Library Classification

Library classification may be defined as:

"The grouping of documents having the same or similar subject content. It is a system of arrangement adopted by libraries to enable users to find their materials quickly and easily."

Regardless of size, format, or date of publication, documents dealing with the **same subject** are grouped together. Therefore, **library classification by subject** is essential for all types of library materials and remains a cornerstone of effective library organization.

1.47 Subject Headings: Latest Developments

Translating the **subject content** of a resource is essential to achieve **subject access** to library collections. This translation may be done through:

- **Numerical systems** (classification numbers), or

- **Controlled terminology** (subject headings and thesauri).

According to **Cutter's objectives**, the basic function of a library catalogue is to show **what the library has on a given subject**. Users approach the catalogue using their own natural language; these terms are then **mapped to controlled vocabulary** used by the catalogue.

Objectives of Subject Headings

1. To **identify** materials on a given subject
2. To **collocate** and link materials on **related subjects**

In this context, the **Library of Congress Subject Headings (LCSH)** remains the most influential subject heading system.

1.48 Library of Congress Subject Headings (LCSH)

LCSH originated from the **ALA List of Subject Headings for Use in Dictionary Catalogues**. Subject specialists at the Library of Congress expanded and refined it, publishing the first edition in **1914** as *Subject Headings Used in the Dictionary Catalogue*.

Development Highlights

- New printed editions appeared roughly **every 10 years** until **1988**
- In **1988**, LCSH was converted into a **computerized database**
- Since then:
    - Printed editions are issued **annually**
    - Electronic versions evolved from **CD-ROM** to **online platforms**

1.49 Structural Features of LCSH

1.49.1 Format of Headings

LCSH uses a variety of grammatical constructions, ranging from simple to complex.

Table 1.49A – Common Formats of LCSH Headings

Format Type	Example / Description
Single-word noun	*Fishing*
Noun + adjective	*Economic development*
Multiword noun phrases	*Library science education*
Nouns with qualifiers	*Banks and banking—India*
Conjunction-based	*Children and war*

1.49.2 Cross References in LCSH

LCSH follows **NISO standards** and recognizes six types of cross references.

Table 1.49B – Types of Cross References in LCSH

Code	Meaning	Purpose
BT	Broader Term	One level higher in hierarchy
NT	Narrower Term	One level lower in hierarchy
RT	Related Term	Same hierarchical level
UF	Used For	Non-preferred term
USE	Use	Directs from non-authorized term
SA	See Also	Links subject groups

1.49.3 Subdivisions in LCSH

For complex subjects, subdivisions help in **precise subject representation**. LCSH supports:

- Topical subdivisions
- Chronological subdivisions
- Geographic subdivisions
- Form/Genre subdivisions

Ways to Apply Subdivisions

1. Subdivision listed directly under a heading
2. Instruction provided with the heading
3. Heading follows a **pattern heading**
4. Use of **free-floating subdivisions**

Rules for free-floating subdivisions are available in the *Subject Cataloguing Manual: Subject Headings* and *Cataloger's Desktop*.

1.49.4 MARC 21 Encoding for Subject Headings

In **MARC 21**, subject headings are primarily entered in **Tag 650**.

Table 1.49C – MARC 21 Subfields for Tag 650

Subfield	Meaning
$a	Topical term
$x	General subdivision
$y	Chronological subdivision
$z	Geographic subdivision
$v	Form subdivision
$2	Source of heading

1.50 Latest Conceptual Developments

1.50.1 FRBR – Functional Requirements for Bibliographic Records

Between **1992–1995**, IFLA developed **FRBR**, an **entity–relationship model** independent of any cataloguing code.

FRBR Entity Groups

Table 1.50A – FRBR Entity Groups

Group	Entities
Group 1	Work, Expression, Manifestation, Item
Group 2	Person, Corporate Body
Group 3	Concept, Object, Event, Place (and Group 1 & 2 as subjects)

FRBR Relationships

Table 1.50B – Types of Relationships

Type	Description	Examples
Equivalence	Exact intellectual copies	Reprints, facsimiles
Derivative	Modified versions	Translations, editions
Descriptive	Commentary on works	Critiques, reviews

1.51 Resource Description and Access (RDA)

RDA was designed to replace **AACR2**. Its development began after the **1997 Toronto Conference**. After testing through the **RDA Toolkit (2010)**, it was officially adopted by the **Library of Congress on 31 March 2013**.

Key Characteristics

- Built on **FRBR and entity–relationship principles**
- Jointly published by **ALA, CLA, and CILIP**
- Supports digital, linked-data environments

1.52 Difference Between AACR2 and RDA

Table 1.52A – AACR2 vs RDA

Aspect	AACR2	RDA
Source of info	Chief source	Preferred source
Authorship	Rule of three	Record all contributors
Edition statement	Standardized	Transcribed as found
Place of publication	One place only	All places as given
Copyright date	Used if publication date unknown	“Date of publication not identified”
Orientation	Card catalogue era	Digital & web environment

1.53 Summary

Technical processing integrates **classification and cataloguing** to prepare documents for effective use. Classification organizes knowledge by subject using standardized notation, while cataloguing provides structured access points—author, title, and subject.

With the rise of **OPACs, copy cataloguing, Z39.50, RDA, and FRBR**, cataloguing has shifted from manual, card-based systems to **interoperable, web-enabled environments**. Subject headings—especially LCSH—continue to evolve, supporting precise subject access across print and digital collections.

The modern Technical Processing Section thus ensures **standardization, discoverability, and global exchangeability** of bibliographic data in contemporary libraries.

1.48 Maintenance Work and Management

Among all library functions, **maintenance work** is one of the least discussed in professional literature, yet it is **fundamental to the effective functioning of a library**. The ultimate success of core operations such as **acquisition, classification, and cataloguing** depends heavily on how efficiently the collection is maintained. No matter how well documents are classified or catalogued, they cannot serve users unless they are **properly organized, preserved, and made physically accessible**.

Maintenance work is a continuous, systematic activity concerned with:

- Proper **stocking, arrangement, and display** of materials on shelves, and
- **Conservation and physical care** of library documents and stack areas.

Broadly, maintenance work involves two major aspects:

1. **Organisation of the stack room and arrangement of books**
2. **Conservation and preservation of library materials**

1.49 Organisation of Stack Rooms and Shelving

In **open access libraries**, where users freely browse shelves, **shelf organisation** becomes critically important. Books that are frequently demanded must be placed where they are **easy to locate and retrieve**.

Key Organisational Considerations

- Professional **classification order** may not always match users' browsing behaviour.
- Popular materials such as **fiction, travelogues, biographies**, etc., may require more prominent placement than highly specialized academic texts, especially in public libraries.
- **Reference sources** (encyclopaedias, dictionaries, yearbooks, directories) should be kept in **separate, easily accessible locations** for uninterrupted use.
- **New arrivals and current-interest materials** should be displayed prominently to attract readers.
- Other materials should be arranged according to **subject relevance and frequency of use**, while still respecting the classification scheme as far as possible.

1.50 Conservation of Library Materials

The second major aspect of maintenance work is **conservation**, which focuses on keeping materials in usable physical condition.

Conservation Practices

- Only books in **good physical condition** should remain on shelves.

- **Regular shelf checking** helps identify torn, soiled, or damaged books for:
    - Repair
    - Rebinding
    - Withdrawal from circulation (if beyond repair)
- Stack areas must be **cleaned regularly** to protect books from:
    - Dust
    - Dirt
    - Insects
- **Environmental control**, such as air-conditioning, is ideal to protect materials from:
    - Excessive heat
    - Moisture
    - Dust accumulation

All conservation efforts ultimately support two core objectives:

- **Locating a document quickly when required**, and
- **Returning it to its correct place** after use so it remains available for future users.

1.51 Maintenance Section: Areas of Responsibility

Maintenance work is usually entrusted to a **Maintenance Section or Division**, often working in coordination with other technical and public service units.

1.51.1 Major Areas of Responsibility

The Maintenance Section is responsible for:

- Decisions regarding:
    - Method of stacking
    - Type of storage equipment
- Arrangement of the collection, including:
    - Oversized books
    - Non-book materials
- Effective use of **architectural features** of the library building for shelving
- Maintaining **orderliness and cleanliness** in stack rooms
- **Training and supervision** of maintenance staff
- Decisions related to:

    - Conservation
    - Repair and binding
- Maintenance of **records related to stock control**

1.52 Functions of Maintenance Work

The specific operational functions performed by the Maintenance Section include the following.

Table 1.52A – Functions of the Maintenance Section

Sl. No.	Function
1	Shelving of documents
2	Location and relocation of documents
3	Shifting of collections
4	Dusting and cleaning of shelves and stack areas
5	Preparation and maintenance of shelf guides
6	Physical maintenance of documents
7	Shelf rectification
8	Maintenance of shelf list / shelf register
9	Stock verification
10	Binding and rebinding
11	Vigilance and security
12	Conservation and preservation

1.53 Concluding Note

Maintenance work may not be as visible or glamorous as acquisition or reference services, but it is **indispensable**. Efficient maintenance ensures that library resources remain **accessible, usable, and preserved** over time. A well-maintained collection directly enhances user satisfaction, safeguards library investment, and supports the long-term sustainability of library services.

1.54 Relations with Other Sections

The **Maintenance Section** is functionally connected with almost **all other sections of the library**. Its effectiveness depends on smooth coordination, particularly with sections that continuously send materials to or withdraw materials from the stacks.

1.54.1 Functional Relationships

- **Technical Processing Section**:
  Supplies newly processed documents (classified, catalogued, labelled) to the maintenance section for shelving.
- **Circulation Section**:
  Withdraws books from shelves for issue and returns them after use; hence, constant interaction is required.

- **Reference Section**:
  Depends on accurate shelving and quick location of documents to support reference services.
- **Bindery**:
  Receives damaged or worn-out books identified during shelf checking.
- **Other Sections**:
  All library sections are related to maintenance work directly or indirectly through document movement and control.

1.55 Management of Maintenance Work

The **scale and organization of maintenance work** depend upon:

- Size of the library
- Complexity of operations
- Volume of collection
- Number of users

1.55.1 Organizational Placement

- In **small and medium-sized libraries**, maintenance work is often handled under the **Circulation Section**.
- In **large libraries** (e.g., university libraries), a **separate Maintenance Section or Division** is common.

1.55.2 Open Access vs Closed Access Libraries

Aspect	Open Access Libraries	Closed Access Libraries
Shelf Access	Users browse shelves directly	Users do not access shelves
Shelving Work	Heavy and continuous	Relatively less
Paging Work	Minimal	Major activity
Responsibility	Library staff reshelves books	Staff retrieves books on request

- In **open access libraries**, users are not allowed to replace books on shelves, making **shelving a major, continuous task**.
- In **closed access libraries**, **paging** (locating and fetching books for users) is an integral part of circulation.

1.55.3 Staffing Considerations

- Large libraries often require:
  - One or more **Assistant Librarians** for maintenance
  - Adequate **junior staff** depending on:
    - Collection size
    - Circulation volume
    - Number of users

- In **multi-storied stack areas**, at least **one shelf worker per wing** is recommended.

1.56 Stacking Principles

The principles governing stacking are strongly influenced by **Ranganathan's Five Laws of Library Science**, emphasizing **use over mere preservation**. With the growth of open access systems, library architecture, specially designed stack rooms, and modern furniture have gained importance.

1.56.1 Guiding Principles of Stacking

- Maximum storage capacity with minimum wastage of space
- Accommodation for books, book-like, and non-book materials
- Easy accessibility to:
    - Shelves
    - Catalogue
    - Circulation desk
- Proper ventilation with dust-free air
- Control of temperature and humidity
- Adequate artificial lighting
- Provision for future expansion

1.57 Stacking Systems

The primary objective of stacking systems is to achieve a **balance between economy of space and ease of access**.

1.57.1 Double Rows on Fixed Shelves

- Books arranged in **two rows** on normal shelves
- Increases capacity but restricts access to the rear row
- Modified versions allow one layer to swing aside

1.57.2 Hinged Stacks

- Two shelves joined with hinges
- Front shelf opens like a door
- Roller attached at bottom for smooth movement

1.57.3 Rolling Stacks

- Metal units mounted on **ball-bearing wheels**
- Shelves can be moved sideways to create access aisles

1.57.4 Multitier Stacks

- Vertical stacking from basement to roof
- Load rests on strong basement foundation
- Floors between tiers are lightweight
- Widely used in large libraries, including in India

1.57.5 Compact Storage

Compact storage achieves **high-density shelving** and includes:

- Stationary shelves with revolving segments
- Stationary shelves with movable drawers
- Movable sliding shelves

Advantages

- Storage capacity increases from about **30% to 50–65%** of floor space

Disadvantages

- Reduced accessibility
- Higher equipment cost
- Increased building and safety requirements

1.57.6 Conventional Shelving

- Most common shelving system
- Shelves arranged in parallel rows
- Aisle width: **75–80 cm**
- Shelf height: **190–205 cm**

Feature	Description
Wall Shelves	Single-faced
Central Shelves	Double-faced
Space Utilization	~30% for shelving
Accessibility	Very high
Economy	Low

Usage Recommendation

- Frequently used collections → Conventional shelving
- Rarely used collections → Compact storage

1.58 Storage of Periodicals and Non-Book Materials

1.58.1 Periodicals

- Current issues displayed on **special racks** for browsing

- Back volumes (usually one year) stored nearby

1.58.2 Non-Book Materials

Includes:

- Audio-visual materials
- Microfilms
- CD-ROMs
- Digital storage media

Key Considerations

- Preservation
- Easy retrieval
- Special storage equipment
- Restricted browsing

Specially designed storage shelves must be selected carefully to ensure both **functional efficiency and service effectiveness**.

Concluding Note

Efficient relations with other sections, sound management, rational stacking principles, and appropriate storage systems together ensure that maintenance work fulfills its fundamental purpose: **making library materials accessible, retrievable, and reusable over time**.

2. Special Libraries

There exist three major types of libraries: **Academic, Public, and Special**. Special libraries are those that are neither academic, public, nor national libraries. They are generally not open to the general public, though access may be granted to specific groups or through appointments.

Examples of special libraries include:

- Corporate libraries
- Law libraries
- Medical libraries
- Museum libraries
- News libraries
- Non-profit organization libraries

Special libraries develop their own institutional culture aligned with their parent organization. They are "special" in terms of:

- **Collection** (highly specialized and subject-focused)

- **Clientele** (restricted and expert users)
- **Services** (pinpointed, exhaustive, and expeditious)

They must preserve and conserve specialized and heritage materials carefully due to their uniqueness and research value.

3. Preservation

Preservation refers to all activities aimed at preventing damage and extending the useful life of collection materials. According to Eden et al. (1998), preservation includes managerial, technical, and financial considerations to retard deterioration and ensure continued availability of materials.

Preservation includes:

- Proper housing and storage
- Environmental control
- Disaster planning
- Treatment and reformatting
- Replacement of damaged materials

Preservation operates at two levels:

- **Collection-level activities** (e.g., environmental control)
- **Item-level activities** (e.g., repair and conservation treatment)

Collection-level preservation often provides broader long-term benefits, while item-level actions are more specific but limited in impact.

4. Difference between Preservation and Conservation

Though often used interchangeably, preservation and conservation have distinct meanings.

4.1 Conceptual Distinction

Aspect	**Preservation**	**Conservation**
Scope	Broad, umbrella term	Specific physical treatment
Focus	Preventive care and management	Repair and restoration
Level	Collection-level and policy-oriented	Item-level intervention
Responsibility	Librarians and managers	Trained conservation professionals
Cost	Relatively cost-effective	Labour-intensive and expensive

4.2 Aspects of Conservation

Conservation includes three components:

1. **Examination** – Study of materials and causes of deterioration
2. **Preservation (Preventive)** – Measures to prolong life
3. **Restoration** – Remedial treatment of damaged items

Restoration is mainly associated with museum objects and films, aiming to return items to their original state.

5. Need for Preservation and Conservation

Library materials are composed of organic substances such as:

- Paper
- Cloth
- Leather
- Adhesives
- Ink

These materials naturally deteriorate due to aging and environmental exposure. Since they serve as nutrients for insects and microorganisms, preventive preservation is essential.

Preventive measures are more cost-effective than interventive restoration after damage occurs. Libraries must preserve not only general materials but also:

- Local history documents
- Genealogical records
- Rare manuscripts

6. Factors Responsible for Deterioration of Documents

Deterioration factors are broadly categorized as follows:

1. Climatic Factors
2. Chemical Factors
3. Insects and Rodents
4. Human Factors
5. Disasters

7. Climatic Factors

Climatic conditions significantly affect library materials.

7.1 Temperature and Humidity

- Sudden variations cause expansion and contraction of paper.
- High humidity encourages fungal growth.
- Dampness weakens bindings and pages.

7.2 Light

- Direct sunlight softens paper and fades bindings.

7.3 Dust and Dirt

- Dust is hygroscopic and attracts moisture.
- Moisture plus dust leads to acid formation.
- Dust causes abrasion and fungal growth.

Preventive Measures:

- Proper ventilation
- Controlled temperature and humidity
- Regular cleaning
- Warm and dry stack environments

8. Chemical Factors

Paper manufacturing often uses:

- Low cellulose fibers
- Alum
- Rosin

These substances produce acidic reactions over time.

Atmospheric pollutants include:

- Sulphur dioxide
- Nitrogen oxides
- Ozone

Effects:

- Brown and brittle edges
- Ink fading
- Leather deterioration

Preventive Measures:

- Air filtration systems
- Air conditioning
- Wrapping books in cloth
- Protective containers

9. Insects and Rodents

Libraries face biological threats from insects and rodents.

9.1 Common Insects and Control Measures

Insect	Damage	Preventive/Treatment Measures
Cockroach	Eats binding and adhesives	DDT, camphor, naphthalene
Termites	Destroy books and files	Carbon disulphide, solignum oil
Silverfish	Damage paper and photographs	Boric acid mixtures
Book lice	Found in musty books	Ethylene, carbon dioxide vapours
Bookworms	Bore into books	Immediate removal of damaged books
Fish insects	Damage coloured bindings	Fumigation vapours

9.2 Rodents

- Mice, rats, squirrels damage paper and leather.
- Trapping is preferred over poison.
- Regular inspection is necessary.

9.3 Fungi

- Develop in humid conditions.
- Leave white scars.
- Controlled by ventilation and hot air circulation.
- Chemical mixtures may be used cautiously.

10. Human Factors

Human beings contribute to deterioration through:

1. Misplacing
2. Mutilation
3. Theft

10.1 Preventive Measures Against Human Damage

- Keep rare materials in protective containers
- Use trolleys for transport
- Avoid stress during photocopying
- Use bookends for support
- Do not shelve books too tightly
- Avoid folding pages
- Avoid underlining
- Avoid licking fingers while turning pages
- Do not place books face down

- Avoid leaning on open books
- Avoid metal clips for display

Special materials such as microfilms, maps, framed art, and architectural drawings require customized storage systems such as cabinets and drawers.

11. Disaster Factors

Though not elaborated above, disasters such as:

- Fire
- Flood
- Earthquake

require proper disaster management planning as part of preservation strategy.

12. Disasters and Their Impact on Library Collections

Disasters may be **natural** (floods, earthquakes, cyclones) or **man-made** (fire, electrical faults, negligence). Library collections are highly vulnerable because most materials are organic in nature.

Major Disaster Impacts

- **Fire**: Complete destruction, charring by smoke and soot, warped bindings, melted plastic media.
- **Water (firefighting or floods)**: Swelling, warping, ink bleeding, pages sticking together.
- **High winds/cyclones**: Structural damage leading to exposure of collections.
- **Earthquakes**: Collapse of stacks, breakage of storage units.
- **Heat**: Shrinking of bindings and distortion of leather covers.

5 LIS Examples (Disaster Context)

1. University library losing rare manuscripts due to short-circuit fire.
2. District public library flooded during monsoon causing newspaper archives to stick together.
3. Special medical library losing X-ray films due to high heat exposure.
4. College library suffering water damage after overhead tank leakage.
5. Archive unit damaged by cyclone leading to displacement of microfilm cabinets.

Disaster Preparedness Measures

Every library must maintain a **written disaster preparedness and response plan** including:

- Emergency procedures
- Supplies list
- Staff volunteers list
- External emergency contacts

- Conservation expert contacts
- Fire and smoke detection systems
- Automatic extinguishing systems

Additional Preventive Measures:

- Prohibit open flames and smoking
- Avoid storing inflammable chemicals in stacks
- Display fire emergency numbers
- Clearly mark emergency exits
- Regularly inspect electrical systems
- Maintain moderate temperature and humidity for digital media

13. Points to Keep in View for Preservation

Preservation includes both preventive and curative actions. For curative preservation, the following categories deserve priority:

- Fragile materials (acidic newspapers, directories)
- Rare local history documents
- Genealogical records
- Photographic prints and negatives
- Audio, video and machine-readable materials

5 LIS Examples (Priority Materials)

1. Acidic 1960s newspapers in a state archive.
2. Rare land ownership maps in a district library.
3. Early doctoral theses of a university.
4. Old photographic negatives of institutional events.
5. Audio recordings of oral history interviews.

14. Preservation of Library Materials

Preservation activities intensified in the last two decades due to growing awareness of deterioration problems.

Two types of preservation:

- **Preventive Preservation** – Environmental control, dusting, supervision.
- **Curative Preservation** – Binding, deacidification, fumigation, lamination.

Types of Documents (as per Dr. S. R. Ranganathan)

- Conventional (Books, journals)
- Neo-conventional (Patents, specifications)
- Non-conventional (Microfilms, AV materials)
- Meta-conventional (Photographs)

Libraries generally preserve:

- Manuscripts
- Rare books
- Journals
- Newspapers
- AV materials
- Government documents
- Institutional scholarly outputs

5 LIS Examples (Preserved Materials)

1. Palm-leaf manuscripts in a research institute.
2. Government gazettes preserved in state libraries.
3. Institutional theses archived in university repositories.
4. Rare law reports in court libraries.
5. Audio lectures preserved in academic digital archives.

15. Developing a Preservation Plan

A preservation plan must include:

- Priority listing of fragile materials
- Cooperative preservation programs
- Bibliographic searches for microform/digital versions
- Financial estimation
- Infrastructure and manpower planning
- Vendor selection for digitization

5 LIS Examples (Planning Stage)

1. Consortium-based newspaper digitization project.
2. Budget planning for thesis digitization in a university.
3. Outsourcing rare manuscript scanning to certified vendors.

4. Microfilm verification through national union catalogues.
5. Cooperative archival preservation among regional colleges.

16. Techniques of Preservation and Conservation

16.1 Binding

Binding strengthens documents for long-term use.

Types include:

- Full leather
- Half leather
- Full cloth
- Half cloth

Sub-processes:

- Mending
- Repairing
- Reinforcing
- Recasting
- Re-backing
- Resewing
- Recovering

5 LIS Examples (Binding)

1. Binding annual journal volumes in university libraries.
2. Half-leather binding for rare Sanskrit manuscripts.
3. Reinforcing spine of frequently used law books.
4. Repairing damaged thesis copies.
5. Re-backing dictionary volumes in reference section.

16.2 Deacidification

Developed to neutralize acidic paper degradation (notably at the Library of Congress).

Mass vapor-phase deacidification using **diethyl zinc (DEZ)** neutralizes acids and creates buffering agents.

5 LIS Examples

1. Treating brittle 19th century newspapers.
2. Deacidifying archival government reports.

3. Stabilizing old academic dissertations.
4. Protecting historical maps printed on acidic paper.
5. Preserving colonial-era gazettes.

16.3 Fumigation

Gaseous treatment to control fungal growth and insect infestation using thymol vapor.

5 LIS Examples

1. Fumigating stacks after termite detection.
2. Treating rare manuscript rooms.
3. Preventive fumigation of closed archives.
4. Controlling fungus in humid regions.
5. Treating infested bound periodicals.

16.4 Lamination

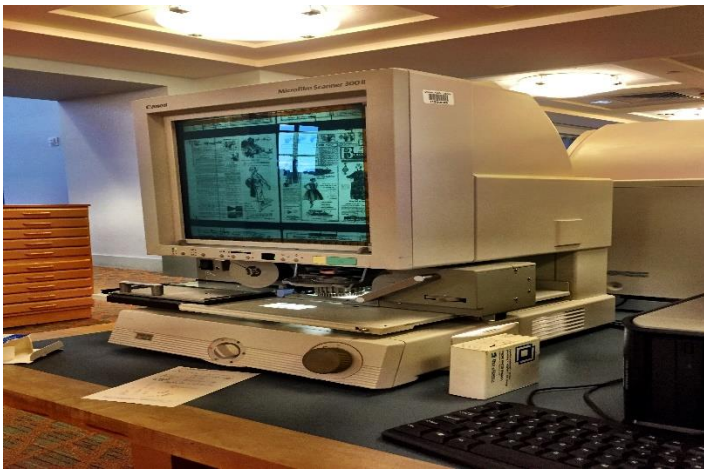
Fusion of protective sheets to strengthen brittle pages.

5 LIS Examples

1. Laminating fragile palm-leaf copies.
2. Preserving brittle freedom movement pamphlets.
3. Strengthening torn historical letters.
4. Protecting old maps.
5. Reinforcing archival notices.

16.5 Microfilming

Least expensive preservation substitute method.



Advantages:

- Multiple copies
- Long-term storage
- Off-site preservation

5 LIS Examples

1. Microfilming old newspapers.
2. Preserving court proceedings records.
3. Archiving government gazettes.
4. Backing up rare periodicals.
5. Storing local history documents in microfilm vaults.

16.6 Photocopying

Low-cost method but repeated copying causes light damage.

5 LIS Examples

1. Copying rare articles for researcher use.
2. Making master photocopy of fragile thesis.
3. Reproducing archival letters.
4. Providing photocopy of rare maps.
5. Copying old catalog cards for backup.

16.7 Photography

Provides high-quality preservation copies with less handling risk.

5 LIS Examples

1. Photographing fragile manuscripts.
2. Documenting rare paintings.
3. Archiving historical certificates.
4. Recording inscriptions.
5. Capturing images of damaged archival material.

16.8 Digitization

Conversion from analogue to digital (rekeying or scanning).

Key Technologies:

- Scanning
- OCR (Optical Character Recognition)
- PDF creation
- Image formats (JPEG, TIFF, GIF)

Advantages:

- Multiple exact copies
- Remote access
- Searchable text
- No generational loss

5 LIS Examples

1. Digitizing university theses into institutional repository.
2. OCR processing of government reports.
3. Scanning rare newspapers for online archive.
4. Creating digital manuscript collections.
5. Converting audio lectures into digital preservation format.

17. Problems Associated with Preservation and Conservation

Preventive preservation rarely creates serious operational problems. However, major challenges arise in **microfilming and digital preservation** due to financial, legal and technological constraints.

Key Problems

- High initial investment (hardware, software, scanners, storage, manpower)
- Rapid technological obsolescence
- Migration of digital data over time
- Copyright and Intellectual Property Rights (IPR) issues
- Software dependency and format incompatibility

Digital preservation requires continuous migration from old formats to new platforms. Such migration is not legally permissible without appropriate rights from copyright holders and software owners.

5 LIS Examples (Preservation Problems)

1. University library unable to digitize theses due to copyright clearance issues.
2. Special library losing access to old CD-ROM databases due to outdated software.
3. Research institute facing budget constraints for high-resolution scanners.

4. Public library unable to migrate microfilm collection due to lack of funds.
5. Institutional repository facing file corruption due to obsolete file formats.

18. Benefits of Preservation

Preservation safeguards **rare, historical, and culturally significant documents** for present and future generations.

Major Benefits

- Protects documentary heritage
- Ensures long-term access
- Reduces replacement cost
- Delays expensive curative treatment
- Enhances institutional reputation

Preventive preservation is always cheaper than restoration.

5 LIS Examples (Benefits)

1. Preservation of rare manuscripts for future research scholars.
2. Archival newspapers supporting historical research.
3. Conserved government records aiding legal verification.
4. Digitized theses increasing global research visibility.
5. Protected institutional archives enhancing credibility.

19. Limitations of Preservation

Preservation methods have inherent limitations:

- Acidic paper becomes brittle over time.
- Acetate microfilms deteriorate (vinegar syndrome).
- Digital storage media (CD/DVD) degrade physically.
- Technology obsolescence risks digital data loss.
- Financial constraints limit preservation scope.

Digital media must be stored at controlled temperatures (approximately 18–20°C) in dry, non-magnetic environments.

5 LIS Examples (Limitations)

1. Brittle 1950s newspapers despite preservation attempts.
2. Damaged acetate microfilm reels in archives.
3. CD-ROM databases unreadable due to scratched surfaces.

4. Outdated floppy disks in early digital archives.
5. Small college library unable to afford digital preservation infrastructure.

20. Concluding Remark

Preservation has become a **central issue in modern librarianship**. Every library must prioritize protection against fire, flood, theft, insects, and technological decay.

"Prevention is better than cure" applies strongly to libraries—preventive preservation is both safer and more economical than post-damage restoration.

Digitization appears to be an effective long-term solution, but it requires:

- Clear policy
- Skilled manpower
- Strong project management
- Adequate funding
- Legal compliance

5 LIS Examples (Professional Responsibility)

1. Implementing disaster preparedness plan in a university library.
2. Annual environmental monitoring in special archives.
3. Budget allocation for digital preservation projects.
4. Training staff in handling rare documents.
5. Institutional digital repository policy development.

WEEDING OF COLLECTION

21. Introduction

Weeding (also called deselection or de-accessioning) is the systematic removal of outdated, damaged, or irrelevant materials from a library collection.

It is an essential part of **collection development**, though often neglected.

Regular wedding ensures:

- Collection relevance
- Shelf space optimization
- Updated information
- Better accessibility

5 LIS Examples (Weeding Context)

1. Removing outdated medical textbooks.

2. Discarding torn reference books.
3. Replacing old law editions with updated versions.
4. Removing obsolete computer manuals.
5. Eliminating duplicate copies of low-demand titles.

22. Why Weed Library Materials?

Weeding is necessary to:

- Conserve shelf space
- Improve access to current materials
- Archive back volumes
- Remove duplicates
- Maintain collection quality

Three major criteria (Magrill & Corbin):

- Usage
- Value/Quality
- Physical condition

5 LIS Examples (Reasons for Weeding)

1. Journals now accessible online archived in compact storage.
2. Duplicate annual reports removed.
3. Damaged dictionaries discarded.
4. Outdated statistical handbooks replaced.
5. Superseded encyclopedias withdrawn.

23. Materials Suitable for Weeding

Weeding should follow a **collection development policy**.

Common candidates:

- Ephemeral materials (newsletters, directories)
- Superseded editions
- Damaged items
- Outdated technical manuals
- Long-unused materials

MUSTIE Criteria

- **M** – Misleading
- **U** – Ugly
- **S** – Superseded
- **T** – Trivial
- **I** – Irrelevant
- **E** – Easily available elsewhere

5 LIS Examples (Weeding Categories)

1. Old Swamy's Handbooks replaced annually.
2. Outdated travel guides removed.
3. Torn children's books discarded.
4. Superseded computer programming manuals withdrawn.
5. Duplicate journal issues redistributed to branch campuses.

24. Benefits of Weeding

24.1 Save Space

Maintains shelves below 85% capacity and improves display space.

24.2 Save Time

Reduces staff shifting and user search frustration.

24.3 Improve Appearance

Clean shelves attract readers.

24.4 Maintain Reliability

Ensures up-to-date and credible information.

24.5 Improve Collection Monitoring

Identifies lost, damaged, or outdated materials.

24.6 Strengthen Collection Development

Provides insight into strengths and weaknesses.

5 LIS Examples (Benefits)

1. Freeing space for new competitive exam books.
2. Improving browsing experience in public libraries.
3. Removing obsolete astronomy books referencing Pluto as a planet.
4. Making shelves visually appealing.

5. Enabling better subject-wise expansion planning.

25. Weeding Checklists

A checklist helps evaluate retention value.

Sources for evaluation:

- Standard bibliographies
- Subject expert opinion
- Core collection lists
- Circulation data
- Replacement cost analysis

5 LIS Examples (Checklist Application)

1. Consulting subject faculty before discarding law books.
2. Checking citation frequency before removing research titles.
3. Reviewing core bibliography lists.
4. Evaluating circulation records.
5. Comparing repair vs replacement cost.

26. Disposal of Weeded Materials

After withdrawal, materials may be disposed through:

26.1 Sell

Annual book sale or online resale.

26.2 Donate

Hospitals, schools, rural libraries.

26.3 Trade

Exchange with other libraries.

26.4 Recycle

Paper recycling through contractors.

26.5 Destroy

Final option when no reuse is possible.

5 LIS Examples (Disposal Methods)

1. Donating duplicate textbooks to rural colleges.
2. Selling old fiction in annual library sale.

3. Trading surplus law reports with court libraries.
4. Recycling damaged magazines.
5. Destroying unusable mold-infested books safely.

Unit.8 Planning

1. Role and Functions of Library Buildings

Library buildings are not merely physical structures; they are functional systems designed to support library operations, services, and future growth. A well-planned library building must be accessible, flexible, economical, and user oriented.

A. Core Functions of a Library Building

a) Effective technical operations of the library
b) Efficient and rapid production of information on demand
c) Provision of quiet, comfortable, and attractive study areas
d) Facilities for individual and group research
e) Promotion of reading habits
f) Facilitation of user contact with library resources
g) Storage and preservation of materials
h) Quick and easy accessibility to reading materials

5 LIS Examples

1. Separate technical processing room for classification and cataloguing.
2. OPAC terminals placed near entrance for rapid information retrieval.
3. Silent reading hall with ergonomic seating.
4. Research cubicles for PhD scholars.
5. Compact stack area for preservation of rare books.

2. Preliminary Research Before Designing

Designing a library building requires systematic study and benchmarking.

A. Study of Existing Library Buildings

Librarians should visit newly constructed libraries to analyze:

- Space utilization
- Technological integration
- User movement patterns
- Staff workflow efficiency
- Architectural strengths and weaknesses

B. User-Centered Research

- Conduct user surveys
- Organize focus group discussions
- Assess present and future needs

- Collect staff feedback

5 LIS Examples

1. Survey showing demand for more group study rooms.
2. User feedback requesting charging points at reading desks.
3. Staff recommendation for separate bindery space.
4. Observation of poor lighting in another library to avoid repetition.
5. Demand analysis indicating need for digital media lab.

3. Library Space Planning: Roles and Responsibilities

Library planning follows an "inside-out" approach, where internal functional requirements determine the external structure.

A. Role of the Librarian

- Identify functional areas
- Estimate space requirements (20-year growth projection)
- Define inter-relationships between sections
- Specify technical requirements (internet, ventilation, acoustics)

B. Role of the Architect

- Translate librarian's requirements into graphical plans
- Ensure structural feasibility
- Integrate aesthetics and technical systems

C. Role of Library Consultant (if appointed)

- Provide expert guidance
- Suggest innovative design concepts
- Conduct stakeholder consultations

5 LIS Examples

1. Planning separate circulation and reference zones.
2. Designing traffic flow to avoid congestion near issue counter.
3. Specifying server room with climate control.
4. Planning future expansion space for digital lab.
5. Consultant suggesting collaborative learning space model.

4. Planning a Library Building

A. Essential Planning Elements

a) Function of the library
b) Size of the library
c) Design features
d) Designated spaces
e) Accessible shelving space
f) Signage system
g) Ambience
h) Space for electronic and AV equipment
i) Safety measures

5 LIS Examples

1. Academic library prioritizing research carrels.
2. Public library emphasizing children's reading zone.
3. Special library allocating more archive storage.
4. Installation of CCTV for safety.
5. Clear directional signage for stack areas.

5. Determining the Size of the Library

Library size depends on:

A. Influencing Factors

a) Unique needs of the institution
b) Functions of the library
c) Resource availability
d) Collection size
e) Proximity of other libraries

No universal standard exists; planning must align with service objectives.

B. Essential Characteristics of Library Buildings

- Attractive
- Functional
- Efficient
- Flexible
- Barrier-free
- Expandable

5 LIS Examples

1. University library planning for 20-year collection growth.

2. Public library ensuring wheelchair accessibility.
3. Designing flexible modular furniture for future rearrangement.
4. Allocating additional storage anticipating journal expansion.
5. Creating multipurpose hall adaptable for workshops.

6. Principles of Planning Libraries

A. Fundamental Planning Principles

a) Functional efficiency over decorative appearance
b) Economy in administration and operations
c) Study areas near active collections
d) Simplicity and user-friendliness
e) Provision for future growth
f) Expansion capability
g) Adequate staff facilities

5 LIS Examples

1. Locating reference section near stack area.
2. Designing compact service desk for operational efficiency.
3. Providing staff rest room and workspace.
4. Ensuring additional floor load capacity for future shelving.
5. Creating simple navigation layout for first-time users.

Concluding Note

A library building must serve as a dynamic infrastructure that supports evolving services, technological changes, and community needs. Effective planning integrates professional standards, user expectations, administrative economy, and long-term flexibility to ensure sustainable library growth.

7. Location of the Library

The location of a library significantly determines its usage, accessibility, and visibility. The guiding principle is maximum accessibility rather than scenic or isolated placement.

A. Principles of Ideal Location

a) Centrally located within the campus or city
b) Easily accessible to the largest number of users
c) Preferably on the ground floor in multi-storied buildings
d) Close to academic or administrative blocks (in institutions)
e) Positioned where user footfall is naturally high

The traditional assumption that libraries must be located in secluded, silent areas is outdated. A conducive environment for study can be architecturally created even in busy surroundings.

Comparative Location Preferences

Situation	Preferred Location	Reason
University Campus	Near academic block	High student movement
Multi-storey building	Ground floor	Easy access, trolley movement
City Central Library	Central business district	Maximum public access
Public Library	Near community hub	Better outreach
Special Library	Within parent organization	Proximity to professionals

5 LIS Examples

1. Central library located adjacent to main lecture halls.
2. Public library placed near metro station for accessibility.
3. Special corporate library situated inside R&D block.
4. Avoiding basement location due to humidity risk.
5. Ground-floor design enabling barrier-free wheelchair access.

8. Functional Areas in Libraries

A. Interior Space Requirements

A library building must accommodate storage, user services, staff operations, and amenities.

Core Divisions

a) Reception/Entrance Hall
b) Reading Room
c) Children's Reading Room (Public Libraries)
d) Study Carrels (University Libraries)
e) Meeting/Conference/Exhibition Hall
f) Computer Room
g) Librarian's Room
h) Staff Rooms
i) Acquisition Section
j) Technical Services Area
k) Administrative and Finance Section

B. Broad Functional Areas

User Services Areas	Staff Areas	Support Areas
Circulation Desk	Librarian's Room	Cloak Room
OPAC Terminals	Technical Processing	Toilets
Reference Desk	Acquisition Section	Cafeteria
Reading Tables	Finance/Admin Section	Temporary Storage
Periodicals Display	Server Room	Bindery

5 LIS Examples

1. Dedicated digitization lab in university library.
2. Separate children's reading zone in public library.
3. OPAC terminals near entrance lobby.
4. Archive room for rare manuscripts.
5. Photocopying facility near reading area.

9. Space Requirements (Based on IS 1553: 1989)

The Bureau of Indian Standards (BIS) provides guidelines for primary elements in library design.

A. Structural Guidelines

Recommendation	Standard
Single-level floors	Mandatory
No thresholds inside	Required
Single controlled entrance/exit	Recommended
Longitudinal gangway	Minimum 1 meter
Cross gangway	Minimum 1.35 meters
End gangway	Minimum 1.325 meters

B. Stack Room Standards

Parameter	Recommendation
1 rack (2m length) capacity	700–750 volumes
1 sq. meter stack space	150 volumes
Rack center-to-center distance	1.80 meters
End wall to first rack center	1.55 meters

C. Reading Room Standards

Parameter	Recommendation
Area per reader	2.33 sq. meters
Reading table size	2.4m × 0.6m
Distance between table rows	1.8 meters

D. Size of Administrative Rooms

Room Type	Area (sq. meters)
Librarian/Deputy Librarian	30
Classifier/Cataloguer	9 per person
Secretary	9
Visitors' Room	15

Staff (non-service points)	5 per person
Discussion/Seminar Room	2 per person
Cubicle	7 per person

E. Environmental Standards

Element	**Standard**
Acceptable noise level	40–45 dB
Temperature (rare books)	22±1°C
Relative Humidity	50±5%
Rubber shoes on furniture	Mandatory
Noise insulation reference	IS 1950: 1962

Note: ICT infrastructure standards (WiFi, server rooms, cabling) must be additionally planned as modern extensions.

5 LIS Examples

1. Stack planning based on projected 5 lakh volume growth.
2. Rare books section with climate-controlled storage.
3. Rubber-wheeled book trolleys for noise control.
4. 45 dB noise compliance in silent reading hall.
5. Dedicated server room with ventilation and UPS backup.

10. Relative Position of Functional Areas

Proper spatial zoning improves workflow and minimizes disturbance.

A. Near Entrance/Exit

- Cloak room
- Security gate
- Single controlled entry/exit

B. Lobby Area

- Issue desk
- Reference desk
- OPAC terminals
- Catalogue cabinets
- New book display
- Notice boards

C. Central but Away from Users

- Librarian’s office
- Deputy Librarian
- Technical processing
- Clerical desks
- Server room

D. Central User Zone

- Stacks
- Periodicals section
- Reserved books section
- Reading tables and carrels
- AV hall
- Photocopying
- Internet terminals

(Reading areas must be close to stacks for convenience.)

E. Far End of Library

- Book repair & bindery
- Digitization lab
- Cafeteria
- Discussion rooms
- Special collections
- Toilets
- Multi-purpose halls

5 LIS Examples

1. Cloak room immediately after entrance security gate.
2. OPAC terminals placed in lobby for quick search.
3. Technical processing room isolated from reading area.
4. Reading tables placed near windows for natural light.
5. Bindery located at rear to reduce noise disturbance.

11. Secondary Collection

As the collection expands, it is advisable to divide it into two major sequences:

a) Active Collection
b) Secondary Collection

A. Active Collection

Recent additions and frequently circulated materials.

B. Secondary Collection

Older editions, less-used, outdated, or obsolete materials.

Secondary collections are usually stored in:

- Upper floors
- Compact shelving
- Less prime areas

The objective is to make the active collection visually attractive, relevant, and easily accessible while retaining older materials for archival or policy-based review.

Key Advantages

- Improves visibility of current resources
- Facilitates periodic weeding
- Enhances user browsing experience
- Optimizes prime shelf space

5 LIS Examples

1. Moving pre-2000 engineering textbooks to secondary stacks.
2. Storing superseded medical editions in upper-floor compact shelving.
3. Retaining old annual reports in secondary archive room.
4. Separating frequently used exam preparation books as active collection.
5. Creating closed-stack repository for rarely used government gazettes.

12. Compact Shelving

Compact shelving (High Density Shelving) is a movable storage system mounted on floor-installed rails.

Types

Type	Description
Manual	Hand-operated movement
Electrical	Motorized operation
Safety Features	Auto-stop when obstacle detected

Advantages

- Eliminates aisles

- Maximizes storage capacity
- Ideal for less-used materials
- Suitable for multipurpose halls

Limitations

- Reduced browsing access
- Higher installation cost
- Mechanical maintenance required

5 LIS Examples

1. Storing bound journals in compact shelving.
2. Housing theses archive in high-density racks.
3. Using compact shelving in institutional record rooms.
4. Converting part of reading hall into movable storage.
5. Relocating print back volumes after e-journal migration.

13. Multi-tier Stack Systems (MTSS)

MTSS are steel shelving structures with two or more tiers where lower tiers support upper levels.

Features

- Self-supporting columns
- Vertical expansion
- Fixed structure (non-movable shelves)

Comparison

Feature	MTSS	Modular Shelving
Flexibility	Low	High
Expansion	Vertical	Horizontal
Cost	Moderate	Variable
Suitability	Storage	Active browsing

MTSS are best suited for secondary collections.

5 LIS Examples

1. Multi-tier storage for university archival collections.
2. MTSS for newspaper back volumes.
3. Vertical stack design in research libraries.
4. MTSS used for institutional record preservation.

5. Secondary law reports stored in multi-tier stacks.

14. Weeding-out Policy

A written weeding policy must define:

- Types of materials to be removed
- Approval authority
- Disposal procedure
- Frequency of review

Materials Commonly Considered

- Extra copies
- Grey literature
- Outdated CDs/DVDs
- Floppy disks
- Superseded editions
- Unused print journals after digital migration

Weeding must be continuous and systematic.

5 LIS Examples

1. Removing duplicate print journals after e-access subscription.
2. Discarding outdated computer manuals.
3. Weeding obsolete software CDs.
4. Eliminating damaged volumes beyond repair.
5. Reviewing grey literature every 3 years.

15. Digitization of Old Materials

Digitization helps in space-saving and preservation, subject to copyright compliance.

Commonly Digitized Materials

- Institutional publications
- Theses and dissertations
- Rare books
- Old reports

Modes

- Intranet access (restricted)

- Internet access (open access repositories)

5 LIS Examples

1. Digitizing university PhD theses for institutional repository.
2. Scanning rare manuscripts for archival preservation.
3. Creating digital archive of annual reports.
4. Digitizing old newspapers before disposal.
5. Building digital repository of faculty publications.

16. Noise Prevention

Noise control is essential for academic and research environments.

Sound Absorbing Materials

- False ceilings
- Carpeting
- Curtains
- Cork/rubber flooring

Sound Reduction Measures

- Spring doors for offices
- Rubber wheels for trolleys
- Cushioned furniture legs
- Acoustic wall panels

5 LIS Examples

1. Installing acoustic ceiling panels in reading halls.
2. Using rubber-tired book trolleys.
3. Carpet flooring in silent zones.
4. Sound-proof discussion rooms.
5. Spring-loaded doors in bindery section.

17. Space Requirements in Electronic Era

Decline in print journal use and rise in e-resources have transformed spatial needs.

Trends

- Reduced stack expansion
- Increased digital access zones

- Conversion of reading halls into discussion rooms
- Growth in ICT infrastructure

Space Reallocation

Traditional Space	Converted Use
Print journal stacks	Group study rooms
Reference shelves	Computer terminals
Newspaper hall	Digital access lab

5 LIS Examples

1. Removing print abstract journals after online database subscription.
2. Converting stack area into digital learning lab.
3. Creating collaborative research rooms.
4. Installing WiFi-enabled reading spaces.
5. Reducing almanac and directory shelves due to online access.

18. Air-conditioning

Air conditioning ensures:

- Comfort
- Preservation
- Humidity control
- Dust reduction
- Noise control

Controlled factors include temperature, humidity, air motion, dust, bacteria, odors, and toxic gases.

5 LIS Examples

1. 22°C climate control in rare books room.
2. HVAC system in manuscript archive.
3. Central AC in reading hall for productivity.
4. Air filtration in compact storage rooms.
5. Dehumidifiers in basement archives.

19. Facilities for Physically Challenged

Libraries must ensure barrier-free access.

Essential Features

- Ramp entrance

- No thresholds
- Wide doors
- Accessible toilets
- Lifts
- Staff assistance

5 LIS Examples

1. Wheelchair-accessible OPAC terminals.
2. Braille signage in stack areas.
3. Lift access to upper floors.
4. Reserved reading carrels for disabled users.
5. Emergency evacuation plan for wheelchair users.

20. Fire Safeguards

Libraries house irreplaceable heritage materials; fire protection is critical.

Preventive Measures

- Quality electrical wiring
- Fire-proof false ceilings
- Circuit breakers
- Fire extinguishers
- Fire sensors and alarms
- Emergency exits

5 LIS Examples

1. Smoke detectors in stack rooms.
2. CO_2 extinguishers near electrical panels.
3. Fire alarm hooters across floors.
4. Emergency evacuation signage.
5. Annual fire drill training for staff.

21. Parking

Provision for:

- Two-wheelers
- Four-wheelers

- Separate staff parking

5 LIS Examples

1. Dedicated student parking zone near library.
2. Reserved parking for library staff.
3. Bicycle stands to promote eco-access.
4. Visitor parking slots.
5. CCTV-monitored parking area.

22. Washrooms and Utilities

- Separate toilets for men and women
- Accessible toilets
- Water coolers
- Preferably located slightly away but connected

5 LIS Examples

1. Drinking water station inside reading hall.
2. Accessible washroom near entrance.
3. Hygienic sanitation blocks outside main stack area.
4. Handwashing station near cafeteria.
5. Regular maintenance schedule for cleanliness.

23. Green Surroundings

Plantation around the library:

- Enhances aesthetics
- Controls dust
- Improves microclimate
- Encourages eco-friendly environment

5 LIS Examples

1. Landscaping around university central library.
2. Tree plantation drive near public library.
3. Green courtyard reading area.
4. Vertical garden at library entrance.
5. Herbal plantation zone near archival building.

24. Summary

A library building must be:

- Flexible
- Expandable
- Barrier-free
- Noise-controlled
- Fire-safe
- ICT-ready
- Environmentally sustainable

Planning must consider:

- User growth
- Annual collection growth
- Budget allocation
- Maintenance provisions
- Legal compliance

The building must support strategic objectives while ensuring convenience, comfort, and long-term adaptability for future technological and service transformations.

25. Disaster Management

Disasters—natural or man-made—pose serious threats to library buildings and collections. Historical evidence shows that most damages occur due to:

- Fire
- Water flooding (including post-fire water damage)

Therefore, disaster prevention must be integrated into the architectural planning stage itself.

Key foundational considerations include:

a) Seismic study of the building site
b) Structural safety compliance
c) Fire and water control planning
d) Updated Disaster Management Manual
e) Periodic mock drills and review

The disaster manual should be reviewed and updated regularly.

5 LIS Examples

1. Preparing disaster preparedness plan for university central library.

2. Conducting annual fire safety audit in archives section.
3. Updating contact list of conservation experts.
4. Conducting mock evacuation drill in academic library.
5. Installing water sensors in rare book storage area.

26. Fire Preventive Measures

Fire is one of the most destructive threats to libraries due to the organic nature of collections.

Structural Measures

- Compartmentalization of building
- Installation of fire alarm and warning systems
- Fire-resistant furniture and furnishings
- Quality-controlled electrical installations
- Licensed electricians for wiring
- HVAC system compliance certification

Equipment

- Water-based fire extinguishers
- Gas-operated extinguishers (CO_2)
- Fire suppression systems
- Separate inflammable liquid storage room

Additional Safety

- Avoid excessive wooden furniture
- Circuit breakers for overload protection

5 LIS Examples

1. Installing smoke detectors in stack rooms.
2. CO_2 extinguishers in server rooms.
3. Fire compartmentalization in rare manuscript vault.
4. Separate chemical storage outside stack areas.
5. Annual inspection of electrical wiring in reading halls.

27. Water Flooding Preventive Measures

Water damage can result from floods, plumbing failures, or fire-fighting activities.

Structural Measures

- Proper roof drainage system
- No drainage or water pipes above storage areas
- Basement sump and water pump installation
- Avoid storage of rare materials in basements
- Automatic water warning systems

Documentation

- Safe storage of plumbing blueprints
- Emergency access to utility layouts

5 LIS Examples

1. Installing water leak detectors in archive rooms.
2. Avoiding rare book storage in basement stacks.
3. Pump system in university basement repository.
4. Waterproofing roof of periodical section.
5. Maintaining plumbing layout file in disaster manual.

28. Security Arrangements

Security measures prevent man-made disasters such as theft, vandalism, or sabotage.

Structural Visibility

- Clear visibility of public areas
- Well-lit interior and exterior
- Avoid unnecessary rear doors
- Secure openable windows with grills/screens

Monitoring

- Regular patrolling
- Controlled access to rare materials
- Restricted entry to server rooms

5 LIS Examples

1. CCTV monitoring in rare book section.
2. Security guards patrolling stack areas.
3. Access control to digitization lab.
4. Restricting rear emergency doors.

5. Secured entry to electronic resources area.

29. Electronic Security

Modern libraries must protect digital assets from unauthorized access, alteration, or destruction.

Protection Measures

- Controlled access to computer server rooms
- Firewalls and network security systems
- Regular data backup
- Password-protected systems
- Anti-malware software

Physical Protection

- Place systems in visible, monitored areas
- Protect against deliberate equipment damage

Monitoring

- Software tools to monitor user activity
- Logging and access tracking

5 LIS Examples

1. Installing firewall for digital library server.
2. Daily automated backup of institutional repository.
3. Restricting USB ports in public terminals.
4. Using login-based OPAC access.
5. Monitoring usage logs in e-resource section.

30. Integrated Disaster Planning Framework

An effective disaster management system includes:

a) Risk assessment
b) Prevention planning
c) Emergency response protocol
d) Salvage and recovery strategy
e) Training and awareness

Libraries must ensure:

- Fire safety compliance
- Flood preparedness

- Digital security safeguards
- Updated emergency contact lists
- Staff training programs

Disaster preparedness is not optional but mandatory for safeguarding intellectual heritage.

31. Library Furniture

Library furniture is a critical component of physical infrastructure planning. It directly influences service efficiency, user comfort, storage capacity, and technological adaptability.

The University Grants Commission (UGC) Committee on University and College Libraries recommended the following traditional furniture items:

a) Book racks
b) Charging desk with wicket gates
c) Catalogue cabinet
d) Study tables
e) Chairs
f) Periodical display racks
g) Book display racks
h) Newspaper racks
i) Encyclopedia/Dictionaries stand
j) Atlas stand
k) Book trolley
l) Side racks for carrels

These were designed primarily for print-based collections. However, with the growth of digital and non-book materials, furniture requirements have expanded.

5 LIS Examples

1. Replacing wooden catalogue cabinets with OPAC terminals.
2. Installing charging stations for laptops in reading areas.
3. Providing ergonomic chairs in e-resource section.
4. Adding microfilm reading tables in research libraries.
5. Installing audio-visual storage cabinets in media sections.

32. Changing Nature of Library Furniture

With the integration of ICT, libraries now require furniture for:

a) Computer hardware
b) Audio-video storage
c) Microfilm and microfiche readers
d) Video conferencing rooms
e) Server racks and wiring infrastructure

Modern reference desks, circulation counters, and OPAC desks must support:

- Electrical wiring
- Data cabling
- Wi-Fi compatibility
- Future technological expansion

Extension services also require:

- Bulletin boards
- Signage display stands
- Public address systems
- Exhibition showcases

5 LIS Examples

1. Modular circulation desk with concealed cable ducts.
2. Server rack enclosure with ventilation system.
3. Video conferencing table with integrated microphones.
4. Lockable CD/DVD cabinets.
5. Digital signage display near entrance lobby.

33. Standard Dimensions for Reading Furniture

Recommended reading table sizes:

- Single user: 75 cm × 60 cm
- Four users: 150 cm × 90 cm
- Six users: 240 cm × 120 cm

Guidelines:

- No partitions on tabletops (to prevent isolation and obstruction).
- Steel racks are preferred over wooden racks (durability and fire resistance).
- Rubber padding under furniture legs to reduce noise.

Indian libraries are advised to follow standards prescribed by the Bureau of Indian Standards (BIS).

5 LIS Examples

1. Providing 75×60 cm table in carrel area.
2. Installing 6-seater tables in university reading hall.
3. Using powder-coated steel racks in stack rooms.

4. Installing rubber-tired book trolleys.
5. Avoiding table partitions in general reading areas.

34. Important Indian Library Standards (BIS Codes)

Below are major standards relevant to library infrastructure:

Sl. No.	Standard Title	BIS Code
1	Wooden Shelving Cabinets (Adjustable)	IS: 4116
2	Steel Shelving Cabinets	IS: 3312
3	Design of Library Buildings	IS: 1553 (Revised 1989)
4	Library Furniture – Timber	IS: 1829 (Part I)
5	Library Furniture – Steel	IS: 1829 (Part II)
6	Code of Practice in Library Lighting	IS: 2672
7	Specification for Mobile Library Van	IS: 2661
8	Guide for Preparation of Abstracts	IS: 795
9	Guide for Data Elements for Bibliographic Databases	IS: 1870

These standards define:

- Quality of materials
- Dimensions
- Structural strength
- Safety norms
- Lighting requirements

5 LIS Examples

1. Following IS 3312 for steel shelving procurement.
2. Applying IS 2672 lighting standards in reading hall.
3. Using IS 1553 for new library building planning.
4. Following IS 1829 for furniture fabrication.
5. Referring BIS guidelines before purchasing mobile library van.

35. Indian Public Library Standards

Public library norms have evolved from reports such as:

- Advisory Committee by K. P. Sinha (1958)
- National Policy on Library and Information System (NAPLIS, 1986)
- Guidelines for Public Library Systems and Services (1991) by Raja Rammohun Roy Library Foundation (RRRLF)

These are aligned with:

- UNESCO Public Library Manifesto
- International Federation of Library Associations and Institutions (IFLA) Standards

35.1 Finance Norms

- Minimum Re. 1 per capita expenditure recommended (earlier benchmark).
- Higher-performing states encouraged to reach Rs. 2.50 per capita.
- Suggested membership charge: Rs. 10 per annum.

5 LIS Examples

1. Allocating 1% of education budget to public libraries.
2. Introducing annual family membership scheme.
3. Increasing per capita library spending in district library.
4. Budget allocation for mobile library van.
5. Charging nominal user fees for sustainability.

35.2 Library Personnel Norms

- 1 post per 2,000 literate population (Central Libraries).
- 1 post per 2,500 literate population (Other public libraries).
- Professional staff ratio:
    - 40% in Central Libraries
    - 33% in other libraries

5 LIS Examples

1. Staffing model based on district population.
2. Recruiting qualified librarians for central library.
3. Maintaining 40% professional staff ratio.
4. Creating circulation assistant posts in town library.
5. Workforce planning in state library network.

35.3 Building Area Norms

Category	Area Recommendation
Town/Village Library	0.86 sq ft per person
Minimum Village Library	1,000 sq ft
Class I Central Library (>20 lakh population)	50,000 sq ft
Class II Central Library	25,000 sq ft
Maximum limit	100,000 sq ft

Each reader: 25 sq ft
Administrative staff: 54 sq ft
Cataloguing staff: 97 sq ft

5 LIS Examples

1. Planning 1,000 sq ft rural library building.
2. Allocating 25 sq ft per reader in reading hall.
3. Designing 50,000 sq ft city central library.
4. Reserving expansion space up to 100%.
5. Separate space allocation for cataloguing section.

36. Design Recommendations

a) Modular design (pillar spacing 21–30 ft, divisible by 3)
b) Rectangular building preferred
c) No mezzanine floors
d) Floor load capacity: 50 kg per sq. meter
e) No internal staircases in middle of floor
f) Uniform level flooring
g) Book elevator if multi-storey
h) Avoid basement storage

Lighting:

- Fluorescent double 4 ft tubes (without plastic casing)

Furniture planning must align with:

- Future expansion
- Technological adaptability
- User comfort
- Staff efficiency

Proper planning of library furniture ensures durability, adaptability, safety, and service efficiency in both print-dominant and digital-dominant environments.

37. International Public Library Standards

The evolution of international public library standards has largely been guided by the International Federation of Library Associations and Institutions (IFLA).

Historical Development

a) **1973** – Publication of *Standards for Public Libraries*
b) **1977** – Re-issue with minor modifications
c) **1986** – Replaced by *Guidelines for Public Libraries*
d) **2000 version** – Advisory in nature, no quantitative standards

The 1973/1977 Standards provided **quantitative norms**, while the 1986 and later Guidelines shifted to **advisory principles**, arguing that uniform standards are not universally applicable due to differences in:

- Economic conditions
- Literacy rates
- Infrastructure
- Technological development

Thus, post-1986, IFLA emphasized **flexible guidance rather than rigid standards**.

5 LIS Examples

1. Applying 3 volumes per capita rule in municipal library planning.
2. Adapting opening hours as per urban vs rural user demand.
3. Modifying staffing norms according to local literacy levels.
4. Using advisory guidelines instead of fixed ratios in developing countries.
5. Planning branch libraries within 1.5 km radius in urban areas.

38. IFLA Standards for Public Libraries (1973/1977) – Selected Norms

These norms were considered **minimum standards**.

38.1 Public Library System

Parameter	Standard
Preferred minimum population	150,000
Minimum viable population	50,000

38.2 Administrative Unit

Parameter	Standard
Minimum population in any circumstance	3,000

38.3 Service Points – Opening Hours

Library Type	Hours per Week
Urban Main Library	60 hours
Branch Libraries	18–60 hours

5 LIS Examples

1. Keeping Central City Library open 60 hours weekly.
2. Reducing rural branch hours to 24 hours per week.
3. Planning new service unit only after 50,000 population threshold.

4. Establishing sub-branch in 3,000 population block.
5. Extending evening hours in metropolitan areas.

39. Book Stock Standards

39.1 Minimum Working Stock

Condition	Volumes per Inhabitant
Smallest administrative unit	3 volumes
General circumstances	2 volumes

Children (up to 14 years) = 25–30% of population →
Children's books = 1/3 of total stock

Reference books:

- Smallest unit: Minimum 100 volumes
- General: Up to 10% of total stock

39.2 Annual Additions per 1,000 Population

Category	Additions per Year
General circumstances	250
Small administrative units	300
Reference books (>50,000 population)	10% of additions

39.3 Periodicals

Population	Periodicals
Up to 5,000	10 per 1,000 population
5,000–100,000	50 total

(Including multiple copies, foreign language titles, children's periodicals)

5 LIS Examples

1. Acquiring 3 books per capita in small town library.
2. Maintaining 33% children's stock in community library.
3. Adding 300 books annually in rural unit.
4. Ensuring 10% reference additions in large city library.
5. Subscribing 50 periodicals for 75,000 population library.

40. Staffing Standards

40.1 Total Non-Manual Staff

Situation	Staffing Norm
Smallest administrative unit	1 full-time qualified librarian + clerical support
Large, developed unit	1 staff per 2,000 population

40.2 Qualified Librarians

Situation	Standard
Developed urban unit	1 per 2,500 population
Compact system	33% of total staff
Branch-based system	40% of total staff

In large systems → 1/3 professional librarians specialized in children's services.

5 LIS Examples

1. Appointing 1 librarian for 2,500 urban population unit.
2. Maintaining 40% professional staff in city branch network.
3. Hiring children's librarian in district library.
4. Providing clerical support in smallest administrative unit.
5. Increasing staff proportion with population growth.

41. Building Distribution Standards

41.1 Urban Distribution

- Branch library within **1.5 km** of residents
- Large library within **3–4 km** radius

42. Floor Area and Accommodation Norms

Adult Lending & Reference Facilities

Population	Total Volumes	Shelf Area	Open Shelf Capacity	Seating (Reference)
3,000	4,000	100 m²	100	5 seats
10,000	6,000	100 m²	900	15 seats
20,000	12,000	180 m²	3,000	30 seats
60,000	36,000	540 m²	12,000	75 seats
100,000	50,000	750 m²	20,000	150 seats

Note: Figures include circulation space, counters, staircases, catalogues, etc.

5 LIS Examples

1. Designing 750 m² adult section for 100,000 population.
2. Providing 75 reference seats for 60,000 population.
3. Allocating 100 m² minimum shelf area for small town library.
4. Ensuring branch library within 1.5 km radius.
5. Planning open shelf capacity as per per capita norm.

43. Shift from Standards to Guidelines

Post-1986, IFLA emphasized:

- Context-based planning
- Advisory frameworks
- Flexibility over rigid quantitative norms

Reason:

- Wide variation in socio-economic conditions
- Unequal ICT penetration
- Diverse literacy rates
- Different public funding models

Hence, international bodies today prefer **guidelines instead of mandatory standards**.

44. Public Library Guidelines

Many countries have developed **national public library guidelines**, either through government agencies or professional associations. At the international level, the International Federation of Library Associations and Institutions (IFLA) has issued guidelines not only for public libraries but also for:

- Libraries for the deaf
- Mobile libraries
- Hospital libraries
- Services for disabled users
- Braille and talking books
- Audiovisual services

Guidelines are meant to help local authorities tailor services according to community needs within a national framework.

45. Indian Public Library Guidelines

India does not have a separate stand-alone national guideline document issued by a statutory body. However, the most comprehensive document is:

Raja Rammohun Roy Library Foundation (1991) – *Guidelines for Public Library Systems and Services*

45.1 Definitions, Objectives and Functions

A modern public library is:

- Established under state law
- Administered by local government or autonomous authority
- Maintained from public funds

- Open to all without distinction
- Free of charge

Objectives align with the UNESCO Public Library Manifesto:

a) Education
b) Information
c) Culture
d) Recreation
e) Research support

5 LIS Examples

1. Free membership for all citizens.
2. Multilingual collections in regional languages.
3. Cultural exhibitions and lectures.
4. Free access to newspapers and journals.
5. Community literacy programs.

45.2 Resources

- Comprehensive collection in local languages
- Coverage of all subjects based on community needs
- Regular review and updating
- Attractive presentation

Primary resources:

- Books
- Periodicals
- Newspapers

Non-book materials:

- Audio-visual materials
- Digital resources (mainly at central libraries)

5 LIS Examples

1. Annual review of outdated books.
2. Subscription to regional language newspapers.
3. Maintaining children’s audio-visual corner.
4. Updating competitive exam guides.

5. Displaying new arrivals prominently.

45.3 Organisation of Services

Library building should be:

- Centrally located
- Accessible to physically challenged
- Open at convenient hours
- Attractive and welcoming

Essential service features:

- Open access shelving
- Reference and lending services
- Cultural activities
- Branch and mobile libraries
- Trained staff

5 LIS Examples

1. Mobile van service in rural areas.
2. Sunday opening for working users.
3. Wheelchair accessible entrance.
4. Conducting book exhibitions.
5. Providing home lending facility.

45.4 Public Library System

A system consists of:

- Central unit
- Divisional/Regional libraries
- District libraries
- Village libraries

Central unit provides:

- Selection
- Acquisition
- Processing
- Bibliographies

- Reading lists

5 LIS Examples

1. Centralized cataloguing at state level.
2. Supply of processed books to district libraries.
3. Shared union catalogue.
4. State bibliography publication.
5. Inter-library coordination.

45.5 Functions of Different Levels

State Central Library

- Repository of state publications
- Publication of State Bibliography
- Centralised technical services

District & Divisional Libraries

- Regional coordination
- Supervision of smaller libraries

Village Libraries

- Basic reading materials
- Community information support

5 LIS Examples

1. State library maintaining legal deposit collection.
2. District library coordinating village libraries.
3. Regional training workshops.
4. Village reading room for farmers.
5. State-level indexing of local publications.

45.6 Voluntary Organisations

- Should register under Societies Registration Act
- Maintain autonomy
- Eligible for matching government grants

5 LIS Examples

1. NGO-run rural library receiving state grant.

2. Autonomous community library management.
3. Matching grant scheme for expansion.
4. Local trust-managed children’s library.
5. Partnership with municipal authority.

45.7 Library Legislation

- Essential for integrated public library service
- Promotes coordinated network
- Ensures financial stability

5 LIS Examples

1. State Library Act establishment.
2. Mandatory public funding provision.
3. Formation of library authority.
4. Library cess mechanism.
5. Statewide public library network.

45.8 Administrative Machinery

Recommended at national level:

a) National Commission on Library and Information Services
b) Bureau of Library and Information Services

At state level:

- Directorate of Libraries
- Library Committees

5 LIS Examples

1. State Directorate supervising district libraries.
2. National advisory body for policy formulation.
3. State library board meetings.
4. Central funding allocation.
5. Library inspection mechanism.

45.9 Library Finance

Based on NAPLIS recommendations:

- 6–10% of education budget for libraries

- Suggested levy: Re. 1 to Rs. 10 per annum

5 LIS Examples

1. Allocation of 8% education budget to libraries.
2. Library cess collection.
3. Budget for ICT infrastructure.
4. Separate grant for children's section.
5. Annual financial audit.

45.10 Library Services

Services must support:

- Education
- Information
- Recreation
- Culture
- Research

Central libraries hold AV materials and share with smaller libraries.

5 LIS Examples

1. Career guidance service.
2. Competitive exam preparation corner.
3. Film screening events.
4. Local history documentation.
5. Community awareness campaigns.

45.11 Library Personnel

General staffing formula:

- 1 post per 2,000 literate population (central libraries)
- Professional staff:
    - 40% in central libraries
    - 33% in other libraries

Divisions required:

a) Administrative Services
b) Technical Services
c) Reader Services

5 LIS Examples

1. Appointment of children's librarian.
2. Dedicated technical processing staff.
3. Separate reader advisory desk.
4. IT support staff in central library.
5. Clerical assistance for circulation.

45.12 Library Building

Standard:

- 21,520 sq. ft. for 25,000 population
- 0.86 sq. ft. per person

Design brief by librarian must include:

a) Functional qualities
b) Space requirements
c) Logical placement of sections

5 LIS Examples

1. Separate reference hall.
2. Logical placement of circulation near entrance.
3. Adequate lighting design.
4. Stack area near reading tables.
5. Future expansion provision.

45.13 Other Physical Facilities

- Uniform illumination
- Steel racks preferred
- No separate study cubicles
- 120 volumes per 11 sq. ft. floor area

5 LIS Examples

1. Steel shelving installation.
2. Uniform LED lighting.
3. Open reading tables.
4. Standardized furniture procurement.
5. Load capacity planning.

45.14 Organisation of Materials

- Centralised processing recommended
- Master classifiers and cataloguers
- Printed catalogue cards distribution
- Simplified procedures for small libraries

5 LIS Examples

1. State-level central cataloguing unit.
2. Distribution of printed catalogue cards.
3. Simplified classification in village library.
4. Uniform processing standards.
5. Shared bibliographic database.

45.15 Library Records and Statistics

Libraries must maintain:

- Holdings statistics
- Service statistics
- Annual Reports

Annual Report should include:

- Administration
- Finance
- Technical services
- Reader services
- Personnel
- Building and equipment

5 LIS Examples

1. Annual circulation statistics report.
2. Budget utilization report.
3. Growth rate analysis.
4. Visitor footfall data.
5. Inter-library cooperation report.

45.16 Applications of Information Technology

- Manual cataloguing must be strengthened first
- Computerization as supportive tool
- Promotion of CDS/ISIS under NISSAT programme
- Need for national bibliographic software

5 LIS Examples

1. Migration from manual to OPAC.
2. Use of CDS/ISIS software.
3. Creation of union catalogue.
4. Automation of circulation system.
5. Development of national bibliographic database.

Unit 9. Management of change.

1. Change and Its Management in Libraries

Change management is a central concern in all types of organizations, public or private, large or small, service-oriented or commodity-based. In the **Library and Information Science (LIS)** sector, change has been continuous and transformative over the past decades.

Modern libraries are experiencing:

- Shift from print to digital collections
- Replacement of card catalogue by OPAC
- Automation of circulation using barcode and RFID
- Integration of automated and digital libraries
- Emergence of "libraries without walls"

The traditional librarian is no longer merely a custodian of books but is now expected to act as:

- Information manager
- Technology adopter
- Change leader
- Service innovator

Thus, managing change is not optional—it is imperative.

5 LIS Examples

1. Migration from card catalogue to OPAC system.
2. Implementation of RFID-based self-check system.
3. Digitization of institutional theses repository.
4. Introduction of e-resource access through remote login.
5. Conversion of manual acquisition to ERP-based workflow.

2. Change Management

Change management refers to a structured process and tools used to lead personnel toward achieving desired transformation.

It emphasizes:

- The **people side** of change
- Leadership at all organizational levels
- Engagement and participation
- Measurable and achievable outcomes

Before initiating change, the following questions must be addressed:

- What do we want to achieve?
- Why is the change necessary?
- How will success be measured?
- Who will be affected?
- What support is required?

Change should never be forced. It must be:

- Realistic
- Consultative
- Planned
- Measurable

2.1 Steps in Change Management

a) Perceiving a need for change
b) Analyzing existing conditions
c) Conceptualizing change strategy
d) Preparing and piloting plan
e) Overcoming resistance
f) Implementing change
g) Monitoring and reviewing

5 LIS Examples

1. Identifying need to automate circulation system.
2. Conducting workflow analysis before ERP adoption.
3. Staff training before introducing digital repository.
4. Addressing resistance to RFID installation.
5. Periodic evaluation of newly implemented ILMS.

3. Why Change Occurs: Situations for Change in Libraries

Libraries cannot escape environmental pressures. Change arises due to both:

- External environment
- Internal environment

Managers must continuously monitor these forces to remain effective.

3.1 External Environment

External pressures originate outside the library but significantly affect its operations.

They can be categorized into:

- Economic
- Technological
- Socio-political
- Global influences

Libraries interact dynamically with their environment by receiving:

- Inputs (funding, materials, policies)
- Energy (staff, infrastructure)
- Information (technology, networks)

4. Technological Dimensions of Change

Technology is one of the most powerful drivers of change in libraries.

Major developments include:

- Information technology
- Communication technology
- Networking technology

These technologies support:

- Storage
- Retrieval
- Processing
- Transmission of information

4.1 Technological Impact on Library Services

Technology enables:

a) Creation of new services
b) Self-service systems
c) Resource sharing and networking
d) Better understanding of user needs
e) Personalized services

It also supports globalization of information.

4.2 Globalization and Its Impact

Globalization has resulted in:

- International information networks

- Cross-border resource sharing
- Increased quality expectations
- Competitive service benchmarks

Modern communication infrastructure enables:

- Remote access services
- Global visibility of library services
- Participation in international consortia

This influences:

- Organizational structure
- Staff roles
- Library size
- Management style

5 LIS Examples of Technological and Global Change

1. Membership in e-ShodhSindhu consortium for global journal access.
2. Implementation of institutional repository using DSpace.
3. Cloud-based Library Management System adoption.
4. Remote access to databases through VPN.
5. AI-based discovery tools for personalized recommendations.

5. Key Question for Library Managers

Are there technological advances affecting:

- Collection development?
- Operations?
- Service delivery?
- User engagement?

If yes, structured change management must be initiated.

6. Economic Dimensions of Change

Economic transformations have deeply affected public institutions, including libraries. Governments across many countries are:

- Reducing public expenditure
- Encouraging privatization

- Promoting market-driven accountability

Libraries today face:

- Static or reduced state funding
- Rising salary expenditure consuming major grant portion
- Escalating cost of books, journals, and databases
- High investment required for ICT infrastructure

In addition, competition from commercial information providers has intensified. Private firms offer:

- Subscription-based databases
- Information retrieval services
- Document delivery systems
- Knowledge analytics

Libraries must therefore adapt to remain relevant and competitive.

6.1 Key Economic Challenges for Libraries

a) Efficient utilization of available resources
b) Mobilization of alternative funding sources
c) Enhancing quality and accountability of services

Libraries increasingly respond through:

- Marketing value-added services
- Charging nominal fees for specialized services
- Forming consortia and joint ventures
- Improving operational efficiency

5 LIS Examples

1. Joining e-resource consortia to reduce subscription cost.
2. Introducing paid reprography and document delivery services.
3. Seeking CSR funding for digitization projects.
4. Applying for research grants to build digital repositories.
5. Conducting cost-benefit analysis before database renewal.

Key Question:
How will economic changes impact acquisition, staffing, and service delivery of the library?

7. Socio-Political Dimensions

Socio-political developments also generate change in libraries.

Key influencing factors include:

- Grass-root democratization
- Social justice policies
- Literacy campaigns
- Inclusion of marginalized communities
- Government restructuring of public enterprises

These developments influence:

- User expectations
- Access policies
- Service priorities
- Organizational accountability

Libraries must align their vision and mission with the socio-political environment in which they operate.

7.1 Strategic Implications

Libraries must rethink:

- Vision and goals
- Organizational culture
- Resource mobilization strategies
- Structural and functional planning
- Monitoring and evaluation systems

5 LIS Examples

1. Establishing separate sections for SC/ST competitive exam materials.
2. Launching literacy outreach programs in rural areas.
3. Providing multilingual collections for diverse communities.
4. Creating gender-sensitive reading spaces.
5. Supporting Open Access policies aligned with government mandates.

Key Question:
Are socio-political conditions conducive to expanding library services and opportunities?

8. Internal Environment

Alongside external pressures, internal factors also drive change.

Internal environment includes:

- Users
- Physical resources
- Systems
- People

Effective change management requires balancing these four elements.

9. Users (Customers)

Users are the central focus of all library activities.

Commonly stated principles:

- User is the focal point
- Library exists to meet user needs
- Services must revolve around user satisfaction

Users may be:

- Readers
- Patrons
- Researchers
- Clients
- Digital subscribers

5 LIS Examples

1. Conducting user satisfaction surveys annually.
2. Implementing suggestion boxes and online feedback forms.
3. Offering personalized SDI (Selective Dissemination of Information).
4. Designing services based on user behavior analytics.
5. Extending library hours during examination period.

10. Physical Resources

Physical resources include:

- Infrastructure
- Furniture
- Equipment
- ICT facilities
- Collection

These tangibles strongly influence perceived service quality.

Key considerations:

- Comfort and safety
- Cleanliness and ambience
- Up-to-date collections
- Modern equipment

The emerging concept of a “library without walls” further modifies the role of physical infrastructure.

5 LIS Examples

1. Upgrading reading halls with ergonomic furniture.
2. Installing high-speed Wi-Fi and charging stations.
3. Maintaining up-to-date digital subscription databases.
4. Creating collaborative learning spaces.
5. Providing secure server room for digital assets.

11. Systems

Library systems include operational workflows such as:

- Classification
- Cataloguing
- Indexing
- Circulation
- Rules and procedures

Effective systems must ensure:

- Simplicity
- Accuracy
- Timeliness
- Reliability
- User-friendliness

Systems must evolve to meet changing user expectations.

5 LIS Examples

1. Migration from manual cataloguing to MARC 21-based ILMS.
2. Implementation of automated fine calculation system.

3. Introducing self-check kiosks.
4. Simplifying membership registration process.
5. Integrating discovery layer with multiple databases.

12. People

People include:

- Professional librarians
- Technical staff
- Administrative personnel
- Support staff

Their:

- Values
- Beliefs
- Skills
- Attitudes

directly influence organizational culture.

Management must:

- Encourage training and development
- Promote teamwork
- Support innovation
- Develop leadership skills

LIS professionals must combine:

- Technical expertise
- Communication skills
- Service orientation
- Adaptability

5 LIS Examples

1. Conducting regular ICT training workshops.
2. Encouraging staff participation in conferences.
3. Implementing performance appraisal systems.
4. Promoting team-based service innovation.

5. Assigning digital literacy training responsibilities to librarians.

13. Conclusion on Internal and External Change

Library change is multidimensional:

- Economic pressures
- Socio-political developments
- Technological advancements
- Internal structural realities

Successful library managers must continuously analyze both internal and external environments and adapt proactively.

14. Analyzing the Nature of Change in Libraries and Information Centers

Libraries function within a broad environmental framework comprising:

- Technological forces
- Economic pressures
- Political systems
- Social transformations
- Cultural expectations

Change today is:

- Faster
- Wider in impact
- Multi-dimensional
- Continuous

Libraries no longer operate in isolation. They are integral parts of larger knowledge ecosystems. Traditionally conservative in adaptation, libraries now must adopt:

- Strategic planning
- Market orientation
- Technology-driven services
- Customer-centered thinking

All changes whether internal or external—requires:

- New mindsets
- Revised processes
- Updated policies

- Modified behaviors

14.1 Technology as a Transformative Force

Information technology has radically transformed:

- Acquisition
- Organization
- Access
- Retrieval
- Sharing

Modern libraries may function as:

- Digital portals
- Hybrid knowledge hubs
- Libraries without walls

The emphasis has shifted from **storage** to **use**.

Strategic Questions for LIS Managers

a) Should libraries continue to house physical collections?
b) When to purchase print vs electronic formats?
c) What percentage of budget should go to e-resources?
d) Should librarians remain intermediaries or enable direct access?

5 LIS Examples

1. Subscription to e-journals replacing bound volumes.
2. Institutional repositories replacing print theses storage.
3. Remote access through VPN and proxy servers.
4. Cloud-based ILMS systems.
5. Discovery tools integrating multiple databases.

14.2 Service Orientation and User Expectations

Libraries are service institutions. Services must align with:

- User preferences
- Timeliness
- Accessibility
- Responsiveness

Key Service Questions:

- Are we giving users what they truly need?
- Are there alternative service models?
- Are services efficiently delivered?
- How do we measure service effectiveness?

5 LIS Examples

1. Offering 24×7 digital reference services.
2. Conducting regular service audits.
3. Implementing chat-based user assistance.
4. Introducing personalized alert services.
5. Benchmarking services with leading institutions.

14.3 Cost and Value of Information

Cost components include:

- Creation and publishing
- Distribution and storage
- Institutional infrastructure
- Skilled manpower
- Technology systems

Additionally, there exists:

Opportunity cost of not providing timely information.

Cost measurement in LIS is complex and imprecise, yet critical for decision-making.

14.4 Human Resource Dimension

Library effectiveness depends on the trinity:

- Information resources
- Users
- People

HRM has gained importance due to:

- Managerial orientation
- Competitive pressure
- Service expectations

Traditional recruitment emphasized academic qualifications. Modern recruitment emphasizes:

- Leadership
- Change management
- Communication skills
- Technological adaptability

5 LIS Examples

1. Recruiting librarians with ICT certifications.
2. Leadership development workshops.
3. Cross-training staff across sections.
4. Performance-linked appraisal systems.
5. Encouraging innovation through staff committees.

15. Concept of Change and Change Management

15.1 Concept of Change

Change is universal and inevitable.

Organizational change refers to:

Alteration of structure, behavior, strategy, or technology to improve performance.

Change may involve:

- Ending old procedures
- Transition and adaptation
- Beginning new systems

Managers must:

- Diagnose need for change
- Assess desirability
- Envision direction
- Manage equilibrium

Unmanaged change can damage morale and credibility.

15.2 Meaning of Change Management

Change management is a:

- Planned
- Structured
- Controlled

- Stabilized

approach to implementing change.

It operates at:

- Organizational level
- Individual level

Goal:
Secure buy-in and align behavior with change.

16. Content Areas of Change in Libraries

Change may target multiple domains.

16.1 Key Areas of Change

Area	**LIS Implication**
Technology	Automation, digitization, hybrid libraries
Marketing	User segmentation, outreach programs
Quality	Accreditation, service standards
Finance	Resource mobilization, cost control
Accountability	Performance metrics, transparency
Operational Efficiency	Workflow optimization

16.2 Technology

Technology shapes:

- Digital libraries
- Electronic resources
- Networking
- Data analytics

Managerial imperatives:

- Value for money
- Service innovation
- Accountability

16.3 Marketing

User diversity is increasing.

Libraries must:

- Identify user segments

- Conduct surveys
- Develop targeted services
- Monitor user behavior

5 LIS Examples

1. Outreach to non-traditional learners.
2. Social media promotion of services.
3. Mobile library services.
4. Alumni access programs.
5. Data-driven service personalization.

16.4 Quality

Quality = Meeting user expectations.

Customer-based quality approach emphasizes:

- Reliability
- Responsiveness
- Assurance
- Empathy
- Tangibles

Quality certification and ranking impact reputation.

16.5 Finance

Libraries face declining financial support.

Strategies include:

- Resource sharing
- Revenue generation
- Professional budgeting
- Selling value-added services

16.6 Accountability

Libraries must demonstrate:

- Transparency
- Efficiency
- Measurable outcomes

Performance indicators are essential to justify funding.

16.7 Operational Efficiency

Even free services incur costs.

Efficiency pressures arise from:

- Private sector competition
- Funding scrutiny
- User expectations

Libraries must optimize workflows and reduce waste.

17. Types of Change

Change may be categorized as follows:

Type	Description
Anticipatory	Planned to exploit expected opportunities
Reactive	Response to unexpected external pressure
Incremental	Small adjustments for smooth functioning
Strategic	Fundamental structural transformation

17.1 Continuous vs Discontinuous Change

a) Continuous Change

- Gradual
- Planned
- Controlled

b) Discontinuous Change

- Abrupt
- Strategic shock
- High impact

18. Models of Change Management

Various theoretical models guide change processes.

18.1 Kurt Lewin's Three-Stage Model

Three phases:

1. Unfreezing – Create motivation for change
2. Moving – Implement new behaviors

3. Refreezing – Stabilize and institutionalize change

Core principle:
Reducing restraining forces is more effective than increasing driving forces.

18.2 John Kotter's Eight-Step Model

1. Create urgency
2. Form powerful coalition
3. Develop clear vision
4. Communicate vision
5. Remove obstacles
6. Create short-term wins
7. Build on change
8. Anchor change in culture

These steps emphasize leadership and cultural integration.

19. Conclusion

Change in libraries is:

- Inevitable
- Multi-dimensional
- Continuous

Effective change management requires:

- Strategic foresight
- Human resource alignment
- Financial prudence
- Technological adaptability
- Accountability mechanisms

Libraries that proactively manage change will thrive. Those that resist may become irrelevant.

6. Responsibility for Managing Change

Change management responsibility lies primarily with **management and executives**, not with employees.

Employees' responsibility:

- To perform their duties to the best of their ability.
- Their performance depends on health, maturity, stability, motivation, experience, and personality.

Management's responsibility:

- To design and manage change in a way that employees can cope with it.
- To facilitate and enable adaptation.
- To step back objectively and remain non-judgmental.
- To interpret, communicate, and support rather than impose.

Modern managerial role in change:

Traditional Role	**Contemporary Role**
Instruct and impose	Interpret and communicate
Control-driven	Facilitation-driven
Top-down authority	Participative leadership
Order-focused	Enablement-focused

4 LIS Examples

1. Introducing RFID after proper staff training rather than forcing immediate adoption.
2. Explaining reasons for digital repository implementation.
3. Conducting interactive workshops before restructuring sections.
4. Providing counseling support during automation transition.

7. Responses to Change (Overcoming Resistance)

Most employees initially display **negative perceptions toward change**.

Common fears include:

- Job loss
- Loss of status
- Increased workload
- Reduced security
- Role ambiguity

Initial emotional responses:

- Fear
- Stress
- Frustration
- Denial
- Guilt (especially after downsizing)

Resistance is common because routine provides stability.

7.1 Forms of Reaction to Change

Reactions may range from:

- Rejection
- Resistance
- Tolerance
- Acceptance
- Enthusiastic implementation

7.2 Reasons for Resistance (Stueart & Moran)

Resistance occurs when:

1. People do not understand the change.
2. People are inadequately informed.
3. Habits and security are threatened.
4. Satisfaction with status quo exists.
5. Vested interests are affected.
6. Rapid change creates strain.
7. Technology renders skills obsolete.

7.3 Impact of Change in Libraries

Change may disturb:

- Workgroups
- Authority structures
- Individual power positions
- Organizational culture

Thus, overcoming resistance is critical to success.

7.4 Strategies to Reduce Resistance

Strategy	**Practical Implication in Libraries**
Gradual introduction	Phased automation
Active listening	Staff consultation meetings
Transparent communication	Regular circulars and updates
Minimize disruption	Schedule renovation after working hours
Positive reinforcement	Highlight service improvements
Change champions	Appoint tech-savvy librarians

Value alignment	Connect change to institutional mission
Maintain momentum	Regular progress reviews

4 LIS Examples

1. Pilot testing ILMS before full rollout.
2. Creating FAQ documents about new systems.
3. Recognizing early adopters publicly.
4. Offering retraining for obsolete skills.

8. Planning for Change

Planning is essential for successful change.

Change may be:

- Internally generated
- Externally imposed

8.1 Steps in Planning for Change

1. Conceptualizing
    - Understanding need and envisioning direction.
2. Preparing
    - Sensitizing staff and respecting emotions.
3. Organizing Planning Group
    - Forming teams and committees.
4. Planning
    - Developing options aligned with objectives.
5. Deciding
    - Evaluating alternatives and selecting best option.
6. Managing Individuals
    - Addressing reactions and monitoring progress.
7. Controlling Resistance
    - Identifying and counteracting sources of opposition.
8. Implementing
    - Formal introduction of change.
9. Evaluating
    - Reviewing outcomes and making adjustments.

9. Implementing Change

Implementation requires:

- Deep study of prevailing conditions
- Clear understanding of need
- Evaluation of advantages and disadvantages
- Well-defined action plan

Initially, performance may decline.
Over time, familiarity leads to improvement.

9.1 Albrecht's Implementation Guidelines

Step	Application in Library Context
Early staff involvement	Include librarians in planning automation
Brainstorming sessions	Identify risks before digitization
Inform users in advance	Notify patrons of temporary service disruption
Phased introduction	Test digital repository in one department
Appoint change agents	Designate ICT coordinators
Managerial presence	Senior librarian actively supports transition
Regular reviews	Monthly evaluation meetings

9.2 Key Implementation Principles

- Allow time and patience.
- Encourage open feedback.
- Monitor progress continuously.
- Preempt potential problems.

10. Concluding Insight

Successful change management in libraries depends on:

- Managerial accountability
- Transparent communication
- Emotional intelligence
- Strategic planning
- Staff participation

Change is not merely structural adjustment; it is a human-centered transformation process.